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Notes of Travel

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## Editorial

WE regret to announce the death of Mr. E. C. Porter, of Porter bee-escape fame, at his home in Illinois, on the morning of August 6. Further particulars will be given later.

THE article by Mr. George Shiber, page 565, of this issue, is one of the very best we ever received on the subject of "Selling Honey; or, the Bee-keeper his own Salesman." We shall have something further on this subject a little later on.

### "HOW TO KEEP BEES."

THE above is the title of a bulletin by Arthur C. Miller, published by the State Board of Agriculture of Rhode Island. Residents of that State can doubtless secure copies by applying to the State Board of Agriculture at Providence. It is hardly necessary to say that the work is well done, because the author is one of the closest observers on bees this country has ever known.

### A BLAZING TORCH AT NIGHT TO KILL MOTH-MILLERS.

ON p. 532 of last issue is shown a picture of a torch that Mr. S. D. House, of Camillus, N. Y., uses at certain seasons of the year to kill the moth-miller. While, of course, this pest does not annoy his bees (for they are pure Italians), yet they are liable to lay eggs in his combs or on his nice comb honey after either has been taken from the hive. The scheme is not a bad one, and when we visited him we took a snap-shot of it.

### "BEE-KEEPING IN MARYLAND."

THIS is the title of Bulletin 154, by T. B. Symons and also Arthur H. McCray, of the Maryland Agricultural Experiment Station, College Park, Maryland. This bulletin is quite a complete text-book on the subject of bees and their management. It contains numerous illustrations and forty pages of matter about the size of these pages. So far as we can see from a casual glance over the pages, it is carefully and well written. We presume that the bulletin will be sent out free to Maryland bee-keepers.

### BEE-JOURNALISM IN AMERICA TO-DAY.

THERE never was a time when there was a better and cleaner lot of bee-papers than are being published now. Every one is worth reading. Even if one has only a few bees he will see something in one of the bee-papers that will save him ten times its cost for one year. In this connection it is a real pleasure to speak of the excellent work now being done by the new editor of the *Bee-keepers' Review*. When Mr. Tyrrell first took up the work we felt very sanguine that he would succeed. The late issues of our valued contemporary go to show that the *Review* is fully equal to, and in some respects ahead of, its former self, and that is saying a good deal, for Mr. Hutchinson knew, if any one did, how to make a readable, attractive, and beautiful magazine on bees.

### FEEDING OUTDOORS TO PREVENT BEES FROM BOTHERING NEIGHBORS OR CANDY-STANDS AT NEAR-BY FAIRGROUNDS.

WE have before told our readers that there is a county fairground located within an eighth of a mile of one of our largest yards. In the olden days, when the fairs were in session our bees used to visit the candy-stands to such an extent as to drive customers away. This would naturally start the owners of the stands on the war-path against the owners of the bees. In late years, since we discovered the outdoor feeding method, we have been able to put up a counter-attraction that would keep the bees at home. But we discover that the new scheme of giving sweetened water in place of a strong syrup that we formerly gave outdoors is just as effective, and really causes no disturbance and no bad after effects. The bees got barely started at one of the stands on the first day of our county fair this year; but as soon as we started the outdoor feeding of sweetened water, the trouble all disappeared.

Our Mr. Pritchard, as well as our Mr. Marchant, finds that, when they have a lot of work in the way of overhauling colonies when there is a dearth of honey, the outdoor feeding of sweetened water enables them to do this work, because not a robber will show up, when otherwise they would

have to work under cages. Even after the cages are removed, robbers will often pounce upon the hives and sometimes overpower them.

#### OUTDOOR FEEDING TO CALL OFF ROBBERS DURING LATE EXTRACTING.

During the late extracting periods, outdoor feeding of honey thinned down to the consistency of thin nectar will stop all the robbing nuisance. We say *thin honey* because no one would advocate feeding sugar syrup which possibly might go into the combs and then into the extractor.

It is wonderful how little of sweetened water will keep a whole apiary on its good behavior. Actually, 5 lbs. of sugar with nine times its weight of water will keep a whole apiary in good humor all day; and we venture the statement that as many as a dozen hive-covers can be taken off and left off for an hour or more without a robber in sight. We would not, however, advise anybody to try out a scheme of this kind, and then go away and leave the apiary, for there *might* be trouble.

#### MOVING BEES SHORT DISTANCES; HOW TO UNITE COLONIES IN THE SAME YARD SO THAT BEES WILL NOT GO BACK TO THEIR OLD STANDS.

At this time of the year there will be more or less uniting, and, heretofore, it has been something of a problem to get the bees of two or three hives located in different parts of the apiary so that they will stay together contentedly without going back after being united. Something over a year ago we told how bees could be moved short distances in the cool of the morning by jouncing or bumping the hives considerably before they are moved, and then carrying them to their new location. The plan has worked admirably, so that very few if any bees go back to the old position. But emphasis should be put upon the point that the moving should be done *in the morning* before the bees get to flying. Hives should be smoked thoroughly, then bumped and roughly handled, to get the bees completely disorganized, and then put upon a springless wheelbarrow and trundled to a point where it is desired to keep them for the rest of the season. It is often a wise precaution to lean a board up in front of the entrance so that, when the bees do come out, they will mark the new location. It is also well to change the appearance of the old spot by leaving the ground on which the hives formerly stood bare of hives or hive-stands. If another hive be put upon the old place it has a tendency to invite returning bees.

#### ANOTHER SCHEME FOR MOVING BEES SHORT DISTANCES.

Our Mr. Ernest Marchant, who has charge of three of our yards, has been trying out a new scheme that seems to work equally well. The plan is this: On Monday, we will say, he will move a hive facing north a few feet, and point the entrance toward the east. Bees, on returning, will be somewhat con-

fused, but readily find their entrance. On Tuesday he will move the hive again a few feet and give it another quarter-turn, making the entrance face directly opposite its first position. On Wednesday he will give it another move and another twist. On Thursday he gives then another shift. By this time the bees have become accustomed to hunting for and finding their entrance and hive. "Now, then," said Marchant, "you can move these bees the night before, or early in the morning, anywhere you like in the apiary; and wherever you put them the bees will stick."

We don't know which is the better of the two plans. It would seem as if the Marchant way, while a little more work, would be more sure of having all the bees stay in their new location.

Possibly it might be well to work a combination of the two plans, of jouncing and shifting entrances, practicing the jouncing method on the last shift.

#### BUCKWHEAT A PAYING CROP, BOTH FOR THE SEED AND FOR ITS HONEY; HOW WE HAVE SUCCEEDED IN FILLING THE HIVES OF ONE YARD OF EIGHTY COLONIES FULL OF BUCKWHEAT HONEY.

Our neighbor, Mr. H. B. Harrington, at one time or another wrote several articles on the subject of buckwheat as a paying crop. Two years ago he put in 20 acres of buckwheat and sold the crop for nearly \$700. This buckwheat was put on to ground that had already yielded a crop of corn or wheat. This year Mr. Harrington put in 35 acres; but the grasshoppers (this seemed to be a bad year for them) did considerable damage to the fields; but in spite of their depredations, and notwithstanding there were no more than 35 acres in range of 80 colonies, the Harrington yard near these fields filled their hives with buckwheat honey. Some days it seemed as if every bee was going to the fields, for buckwheat at its best is a tremendous yielder of nectar.

Mr. Harrington estimates that he will harvest between 1200 and 1400 bushels; and this, at the present market price, will be worth close on to \$1000.

Our hives at the Harrington yard are pretty well filled with honey—so full that the queens have been crowded for room in which to lay. Our bees have done a good job in fertilizing the blossoms, and our neighbor has done a good job in filling our hives with honey. One difficulty in sowing buckwheat is that some years it yields well in our locality, and in others it yields apparently nothing; but we suspect that one trouble is that there has not been *enough acreage*. If the bee-keepers in their localities will furnish buckwheat seed at half price among their farmer friends it will not take them long before they will see that they can afford to pay full price for the seed, because they can take two crops off the same acreage of land. The York State farmers have been on to this trick of the trade for many years.



Is it not up to the bee-keepers in their respective localities to talk buckwheat and alike? Keep up the campaign, brothers, if you would help fill your pocketbook.

It is our intention to get out a buckwheat pamphlet; for, so far as we can ascertain, no bulletin, either State or national, has been issued on the growing of buckwheat. Mr. Harrington has promised to write the one for us.

The statement has previously been made in these columns that Japanese buckwheat does not yield honey like the old-fashioned silverhull or gray buckwheat; but Mr. Harrington says the Japanese had more bees on it this year than either the gray or the silverhull; but as the Japanese came in bloom at one time, and the silverhull at another, it is possible that weather conditions were more favorable at the one time than at the other. We should be pleased to get reports from our readers on the relative value of Japanese and other buckwheats for honey.

#### MORE ABOUT THAT SCHEME OF FEEDING SO THAT BROOD-REARING CAN BE KEPT UP LATE IN THE FALL, THUS SECURING A LARGE FORCE OF YOUNG BEES IN GOING TO WINTER.

On page 483, Aug. 15, we refer to a new method of slow feeding in the hives by which it takes a colony 24 to 48 hours to take up a pint of syrup. On page 514, Sept. 1, also, we describe J. E. Hand's method of outdoor feeding of sweetened water to accomplish the same results. At three of our yards we have been practicing both the outdoor and indoor methods of feeding in combination, and our Mr. Marchant, who has charge of three of these yards, says he prefers to use the two methods because he can distribute the feed more equitably, or rather, perhaps we should say, where the feed is most needed. By the outdoor plan the strongest colonies will necessarily get the lion's share of the food, leaving the weaker ones with a disproportionately small amount. To overcome this, Mr. Marchant puts one or two hole Boardman feeders to the entrance of the weaker colonies, or where he desires to stimulate brood-rearing by constant feeding, whether the outdoor feeders are going or not, or when the weather is so inclement the bees can not fly.

In order to stimulate the whole apiary the outdoor feeders are put into service whenever there is no buckwheat or other source of natural nectar supply. When these fail—that is to say, when the bees are not flying at all, showing that “nothing is doing”—we start the outside feeders agoing. This we do by mixing nine parts of water and one part of sugar in a common tin pail, and, after thoroughly stirring, pour the sweetened water into the outdoor feeders. In a space of about five or ten minutes the bees will begin flying, for apparently a few stragglers are constantly in the air to give notice when the food is available, and, presto! the whole apiary is alive and doing. But this

sweetened water causes no excitement; and the strangest thing about it, says our Mr. Pritchard, of our north yard, is that, when the supply gives out, the bees go home instead of coming out and prying into every thing where there is a possible chance of robbing.

Right here the reader's attention is directed to the fact that, by the old method of outdoor feeding, i. e., giving a syrup two to one or one to one, there would be more or less excitement after the supply of food gave out, and conditions in the apiary immediately following were such that no one could open up the hives without expecting an onslaught of robbers.

You see the point is here: When the bees get hold of honey or any thick sugar syrup it brings on a *furor* that is practically the same as wholesale robbing. In other words, there is a decided difference in the behavior of bees gathering *nectar* from the fields and gathering a strong sweet from some hive, kitchen, or honey-house. The former is natural, but the latter unnatural. When, therefore, we give the bees outdoors a sweetened water which is no stronger—nay, rather, *weaker* than the nectar they get from the flowers—they are not unduly excited; and when the supply ceases it does not seem to have any more effect on them than when the supply of nectar gives out.

Our Mr. Pritchard, who rears anywhere from 2000 to nearly 3000 queens a season, says he believes this scheme of outdoor feeding of thin syrup is one of the greatest aids to the business he has ever run across. He, like all other queen-breeders, has discovered that a heavy honey-flow paralyzes the queen-rearing operations. A very light honey-flow, just enough to keep up brood-rearing operations, and no more, stimulates brood-rearing and cell-building. Now, then, by bringing about the conditions artificially, we control the supply so that we get a more *uniform* grade of queens and an amount of brood that can not be secured when the supply comes in so fast that the queen is cramped for room.

The one objection to outdoor feeding is that it has a tendency to wear out old bees; but as they would die any way during the early winter, if we can trade old bees for young ones we make a splendid trade, even if the deal does cost a little sugar.

It is our intention, after the hives are well stocked up with hatching brood, to cease the slow method of feeding, and then give all the colonies, after the brood hatches, one quick feed of thick syrup to fill up all available cells except a winter nest which the bees will make if given an opportunity.

#### A CAUTION ABOUT FEEDING SWEETENED WATER OUTDOORS.

We find in a couple of our nuclei, where there is a comparatively small force of bees, that some of this syrup from the outdoor feeders has begun to sour a little. Cool damp nights we have been having of late is partly responsible for this. There is no trouble of this kind in our stronger colonies.

# Stray Straws

DR. C. C. MILLER, Marengo, Ill.

ONE-HOLE feeder for slow feeding, p. 483, is all right; but why not also feed three or four parts water to one of sugar, and make the sugar go three or four times as far? [If a syrup is too thin it will sour in the feeder before the bees take it out. We can't use any thing thinner than two of water and one of sugar.—ED.]

H. THEEN thinks it important, when honey begins candying, to stir it daily with a wooden spoon or handle. That gives it a nice even texture.—*Leipz. Bztg.*, 118. [Stirring is just the very thing that will make honey candy more rapidly. This is the reason why extracted will candy quicker than that in comb which has never been agitated.—ED.]

H. PERKINS, p. 495, says the substance in bottom of queen-cells like peach-gum is often nothing but residue. Residue of what? [Our correspondent probably meant residue of cast-off bowel skins; but these look very different from the peach-gumlike substance found in the bottom of queen-cells after its occupant has departed. Certainly the substance that we find in the cells at Medina is evaporated royal jelly.—ED.]

"KEEP BETTER BEES." That's the motto I would urge every young bee-keeper to inscribe on his banner. The slogan of the lamented Hutchinson, "Keep more bees," appeals to many. "Keep better bees" should appeal to all—to the beginner and the veteran, to the man with five colonies and the man with a thousand. [Indeed, you are right. Not every bee-keeper has experience or brains enough to handle "more bees;" but every one will profit by getting better stock.—ED.]

I WANTED to take extra pains introducing a queen. I removed the old queen, put an empty hive on the stand, put in it three of the frames of brood and bees, set the old hive on top with the new queen in it in an introducing-cage. Of course the field-bees all went to the lower hive. A week later I put the old hive down, returning to it the three frames of brood. The point of safety was that the queen was introduced to a nearly full colony with no old bees, and it is the old bees that raise a racket with a new queen.

I WONDER if Mr. Perkins can be right, p. 496, about a queenless colony being the last resort for queen-cells. I supposed there could be nothing better than to start cells in a strong colony made queenless when preparing to swarm. [Mr. Perkins' statement is correct if we consider an *ordinary* queenless colony; but a colony that has been made queenless and broodless, such colony having previously been kept up to a high state of prosperity by daily feeding, we con-

sider the very best for starting cells. The cells they start do not need "regrafting." The secret of getting good cells lies largely in the science of feeding. The bees must be charged with material for making pap to make good cells—cells that will hatch vigorous queens.—ED.]

THE STATEMENT has been made that if a colony, A, is twice as strong as B at the beginning of the honey harvest, it will store three or four times as much. Morquin says, *L'Apiculteur*, 255, that often, especially if there be only an early harvest, it will be ten or twenty times as much. A has reached its maximum of strength at the beginning of the harvest; brood-rearing begins to wane, and the chief strength of the colony is devoted to storing. Brood-rearing is constantly on the increase in B, requiring nearly all the strength of the colony, and it reaches the profitable point for storing only at the close of the harvest. Perhaps it may be safe to say that when A has a population twice as much as B, it has a *field-force* ten to twenty times as great.

YOU THINK, Mr. Editor, I go to an extreme, p. 484, when I say that here "The rule is that no cells are started till after work begins in supers." Let me tell you how it is. I had my biggest crop in 1908, and it was bad for swarming. Bees began storing about June 3, and the flood was on June 10. Of the colonies that started cells for swarming, 35 per cent were found before June 15, and 65 per cent on or after June 15. In 1910, not a bad year for swarming, 12½ per cent were found before June 15, and 87½ on or after that. [Apparently you are basing your statement on the year of your biggest crop and on a year when you had a light crop. The late W. Z. Hutchinson once said to the writer that he had observed that the conditions that prevail in our Southern States of diminished or no swarming, when a heavy honey-flow is on, are to a great extent the same in the Northern States. At first we were inclined to believe that this condition was peculiar to Texas and other Southern States; but the more we have gone into this, the more we have come to the conclusion that locality has a great deal less to do with the general proposition than many of us suppose; that is to say, given exactly the *same* heavy honey-flow that checks or stops swarming in the South, there will be little or no swarming in the North. It is, therefore, a condition and not a matter of locality; but in the North we don't have quite as strong heavy honey-flows as are very often experienced in the South. If you will go over your records for a period of years, doctor, is it not possible that you will find confirmation of our original statement that brought out this general discussion?—ED.]



# SIFTINGS

J. E. CRANE, Middlebury, Vt.

Dr. Miller makes a pretty strong case in favor of a three-inch glass instead of a two-inch glass side of shipping-case, page 386, July 1. But really I wonder if glass is a necessity in a shipping-case in order to sell honey. It is not, when honey is shipped.



One of the most restful pictures I have seen in a long time is friend Greiner looking over his bees in the shade; for of all the hot places in hot weather for the bee-keeper is a yard of bees without shade; and the necessity he feels for it shows very clearly its value for the bees.



Good work, that, taking inspectors around in an automobile. It more than doubles their efficiency. It is exasperating to spend an hour hunting up a small bee-keeper, leaving only fifteen minutes to look over his bees and giving instructions as to how to cure. Page 388, July 1.



On page 384, July 1, the editor tells us how valuable cartons are in keeping groceries from becoming sticky with honey, and getting tidy housewives "mad all over." Another advantage is the uniform appearance of the packages of honey, which adds to the attractiveness of the grocery.



The experience of Mr. B. D. Cook, our helper, would seem to corroborate the fact that as good results can be secured at queen-rearing during a period of dearth of honey as at other times, as he has had most excellent success since the flow ceased in getting almost every cell built to a good size.



Of all the rich treats GLEANINGS has so far given us this year none will, I am sure, be more appreciated than the address by Anna Botsford Comstock. To say that it is uplifting, inspiring, and helpful is but faint praise. Surely every man as well as every woman ought to get something out of bee-keeping besides dollars and bee-stings.



Mr. S. D. House tells, on page 401, July 1, of the advantages of a sectional hive. I can readily see some of them; but when I think of using a single set of shallow frames there always arises in my mind the vision of sections filled above them with too large an amount of pollen in them. It may be because honey comes in more slowly in ordinary years with us than in other places.

That picture on page 397, July 1, of white clover in Texas, beats me. I thought we of the North had a monopoly of that plant; but here comes our friend Scholl and shows us the folly of our conceit, for they not only have mesquite, catclaw, horsemint, orange-bloom, and a host of other bloom we know nothing about, but our best honey-yielding plant thrown in as a sort of side issue — to fill up the gaps in their main flows, I suppose.



Where combs become clogged with honey, the advice is given, p. 383, July 1, to uncap them and give a partly drawn-out section or two. Would it not be better to give a whole super of partly drawn combs, giving the one or two bait sections to the hive from which you have taken the partly filled super? It sometimes works well to remove the old queen and to give a young queen, for I have often found this condition to exist from the sudden exhaustion of the old queen.



On page 419, July 15, I express my disapproval of bulk honey for the North. Since that was written I have run across a very excellent bee-keeper who is putting up more and more bulk honey here in the North, and says he thinks it more profitable to sell bulk honey at 12½ cents than section honey at 18 cents. He just cuts up the combs from the supers to fit two or three sizes of tin pails, without pouring extracted honey over the combs. Let the light shine.



Much has been written of our friend W. Z. Hutchinson, since his death, not too much, however, for he was not only the kindest husband and father, but the friend of every bee-keeper, and I have wondered many times since his death why we were all so much attached to him, so that his death has seemed like a great personal loss. Was it not the sweet Christian spirit that pervaded his whole life, and controlled his relations with all with whom he came in contact?



That article by Dr. Phillips, on American and European foul brood, page 404, July 1, is one of the best things this year so far. It is hard for most persons to see. His last sentence, p. 407, "This disease is very variable in its symptoms and other manifestations, and is often a puzzle to the bee-keeper," it will be well to remember; and if any one is in doubt let him send a sample to the Bureau of Apiculture, Department of Agriculture, Washington, D. C., and they will gladly give a correct diagnosis.

# BEE-KEEPING IN CALIFORNIA

P. C. CHADWICK, Redlands, Cal.

The average per colony for the season in this locality was less than 50 lbs.

On page 420, July 15, I quoted Mr. E. M. Gibson as saying that the white sage was the sheet anchor of the bee industry there, etc. Mr. Gibson did not say white sage, but *Eriogonum* (buckwheat), which I some way confounded in my mind with *Audibertia polystachya* (white sage). Mr. Gibson has called my attention to this error, which I gladly correct.

Some bee-men open their honey-houses, tanks, extractors, and wet combs to let the bees clean them out at the end of the season. The best that could be said of this practice would be no compliment; and the worst—well, I can't do it justice, so I won't try. Robbing once started is hard to stop; is largely a habit, and, like all habits, easier to form than break.

## FOREST FIRES DESTRUCTIVE TO BEE PASTURAGE.

The forest fires on the San Bernardino range just to the north of us made one of the most beautiful and awe-inspiring sights ever witnessed. The flames are said to have leaped at times to the height of 200 feet, and traveled part of the time eight miles per hour. There has just been extinguished another very destructive blaze on the San Jacinto range, while scarcely a day for a month has passed without smoke being visible in some direction from brush fires, all of which destroy our bee ranges, and doubtless apiaries, for the reported loss annually of one or more is expected. Bee-keepers can not prevent all of the fires; but they can make themselves safe by cleaning their yards so fire can not run through them. Carelessness is largely the cause of these fires getting started.

## A NEW DISEASE LAW NEEDED IN CALIFORNIA.

We have hoped all along that European foul brood would not get across the Tehachapi range; but if Mr. L. J. Ray's article, p. 491, Aug. 15, is correct, we have hoped in vain. I expect to make a personal investigation. Mr. Ray intimates this was the cause of the poor condition of bees this season; but as the poor condition was universal, and this disease has not been reported elsewhere, I can not agree with him on that point. There are no cases in this district, to my knowledge; and even the American is well under control at this time. It all brings the fact before us, however, that we should never let another session of the legislature pass without the enactment of an efficient foul-brood law. One thing is sure—our present law is a farce, and should be remodeled

entirely. We also need a national law that will prohibit the interstate shipment of bees or honey from apiaries that have not been carefully inspected. Our next State convention could not use time to better advantage than to consider this one subject to the exclusion of all others. There should be a State law making inspection compulsory, with a fine imposed on any person found harboring, selling, or offering for sale diseased bees, or honey from diseased colonies.

Our law now provides that, when a case is reported, the inspector shall act. Well, that looks pretty good; but with no one having access to his neighbor's bees they might rot down all around him and he would still have no case to his knowledge to report to the inspector. The law is so loosely drawn that the inspector, if he so desires, can sit around and draw \$4.00 per day. As our county grand jury called our county bee-inspector to task for reporting such an excessive amount of office time, one might infer from his report that the bees were being hauled to the county-seat for inspection!

My idea would be to abolish the county inspector and have a State inspector appointed by the governor, upon recommendation of the State association, and subject to dismissal upon recommendation of the association if proven inefficient—the owners of bees to report the number of colonies and location to said State inspector. The latter could license competent bee-keepers throughout the State as deputies to inspect such apiaries as he might designate or that might be called to their attention by the owner. After inspection is made, a report, on official blank form, could be sent to the State inspector, and recorded in proper shape, an inspection fee of 10 cts. per colony being collected from the owner. Where owners fail or refuse to report their bees annually, a fine of not less than \$25.00 should be assessed. If no foul brood is found in a locality, the time of future inspections could rest with the State inspector. I might go on giving details of how I think the law should read; but as there will doubtless be sufficient in this to bring out a discussion I will not give more details at this time. It can be seen, however, that a State inspector, within 12 months, could have the location of diseased areas well mapped out, and thus know where to center his efforts.

## Alfalfa Now Yielding Honey in Missouri.

This is the first year I have ever noticed bees working on alfalfa in Missouri. I suppose that the drouth put it in about the same condition as where they irrigate. This is the first bad drouth we have had since farmers began sowing alfalfa here, and it will be a good thing for bee-keepers, as more is being sown each year. Alfalfa produced seed here this year for the first time, showing beyond a doubt that it produced honey.

Liberty, Mo.

J. F. DIEMER.



# Conversations with Doolittle

At Borodino, New York

## KEEP MORE BEES.

"I have twenty colonies of bees, and a farm of nearly 100 acres; but I have read that, if the best results are to be secured, one should keep more bees. What is your opinion of this?"

"It is a question uppermost in the mind of many a bee-keeper, leading him to ask how many colonies he can handle with profit. However, there is little doubt that many bee-keepers increase their colonies more than their ability to care for them warrants, for they labor under the impression that it is hives of bees rather than bees in a hive that will bring the most profit. I do not say this of the experienced bee-keeper, of our most practical apiarists, nor of the specialists who count their colonies by the hundreds and thousands, but, rather, of the vast majority of those who have been persuaded through reading, or because of the success of a neighbor in an unusually good year, to undertake bee-keeping on a larger scale.

"You say you are a farmer. As I look about me I often think that there is scarcely a farmer who is large enough for his farm. The majority have so much land that they are land poor. If every farmer would put the labor, energy, and manure on fifty acres that he now puts on 100, he would produce as much with a great reduction in interest and taxes. If I am correctly informed, there are few farmers in parts of England and Holland with more than forty or fifty acres of land; and yet from these, which with us would be considered too small to dabble with, the very best of farm products are produced, to an amount greater than many of our occupiers of from 100 to 200 acres can put upon the market. So it is not so much from numbers as it is in making each number turn out the highest possible percentage of profit."

"But if ten colonies would give me a profit of \$100, should not 100 colonies give me \$1000?"

"I am afraid that, with such a line of reasoning, you, like too many bee-keepers, would be trying to overreach in the increase of colonies, instead of working to obtain the maximum results from the minimum number. Why not say if ten colonies will give me \$100, should not 1000 colonies give me \$10,000, or 5000 give me \$50,000? It is not so much the number of colonies as it is making each colony do its utmost in storing surplus. Any colony that does not store a high percentage, after careful attention, should be broken up, or a change of queen made. The item of improving the stock is one well worth paying particular attention to; for with better stock and a smaller number of colonies the same results can be obtained as those secured by the small farmers of the old country. Just fancy yourself, an overworked farmer, keeping 1000 colonies of

bees, selecting the colony, or three or four from that number, which scored the highest number of perfection points, and from these building up a race of bees which shall be a joy to the world. It surely does not pay to furnish hives, fixtures, and possibly labor, at the present high prices, to run an apiary of 100 colonies when 50 can be made to secure the same profit, saying nothing about any improvement of stock. The 'not how much, but how well' principle will apply as well to bee-keeping as to any other line of business. And this 'how well' is what the world is looking after in all of the pursuits which elevate a community or a nation."

"But could I not purchase a queen from some improved strain of bees? and then, by allowing natural swarming, would they not duplicate themselves to my advantage, without this continual fussing over an improvement of stock?"

"Just try that with your best Jersey cows. Turn them out in a 10,000-acre pasture with hundreds of scrub males of all descriptions, and see how the duplicating will come out. The queen may be from the most prolific strain in the world, and the hive you are using perfect, and yet, without considerable attention on the part of the bee-keeper, the best results will not follow. Do you expect to produce such results from that herd of Jerseys without constant attention? You know that you can not leave home for 24 hours unless you hire some one to care for those cows. And yet you think of keeping hundreds of colonies of bees without seeing them for weeks if not months at a time. It must be the harmonious working of both bees and bee-keeper all along the line that will bring about the best results, the same as it is with the dairyman and his cows."

"But you know every one is saying, 'Keep more bees if you would be successful,' do you not?"

"I know we read and hear a great deal about keeping more bees. If this referred to more bees in a hive at the right time for the honey harvest, together with a greatly improved race, it would all right; but if it means more colonies of bees, with a go-as-you-please idea along with it, then I consider it contrary to obtaining the best possible results from a minimum investment of capital. Bee-keepers, above all others, have no time to sit around on drygoods-boxes at the country store. If a few moments of leisure time manifest themselves, there are many perplexing questions which come up during the busy season that can now be studied and solved by sitting down with a good book on bee-keeping, or by looking through one's files of bee-papers.

"No business will run itself; and if you yourself do not get behind it and move it along it will not successfully go. The more effort you put into any business the greater will be the success."



# General Correspondence

## THE NEW QUEEN-MAILING CAGE FOR THE PREVENTION OF DISEASE.

### The Importance of Boiling All Honey Used in Making Queen-mailing-cage Candy.

BY E. R. ROOT.

On page 481 of our issue for August 15 we called attention to the fact that foul brood had been carried in the candy used in queen-mailing cages into yards where the disease had never before existed. Most queen-breeders take the precaution to boil the honey that they use for making queen-cage candy; but we learn that some have not done so. There are several prominent foul-brood inspectors who believe that foul brood has been carried in some particular cases through the mailing-cages. While no one contends now that the queen or her attendants may carry the disease, we do know that infected honey, if used for making queen-cage honey, *could* carry infection where the candy method of introducing is used. Notwithstanding that some queen-breeders are inclined to doubt the transmission of the disease in this way, yet in view of the awful and alarming spread of foul brood over the country in the last ten years, it would behoove all queen-breeders to err on the safe side by boiling all honey that they use in making queen-cage candy. This is best accomplished by adding about ten per cent water to the honey, and boiling the combination for about half an hour; otherwise the flavor of the honey will be impaired, and the body will be too heavy to mingle readily with the pulverized sugar. It is so easy to do this that we do not see why any

all the honey from this time on, no matter what method of introducing may be employed. Even if the present mailing-cages using the eat-out-candy plan of introducing are discarded, and the push-in-comb-cage plan here shown is adopted, the danger is that robbers may get at the old cage and thus carry the infection to their hives. The aver-



The new mailing and introducing cage with carton.

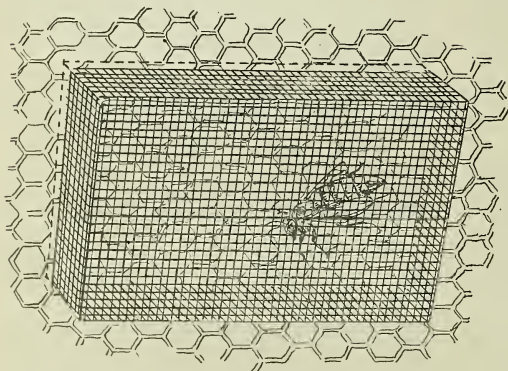
age bee-keeper, not suspecting danger, might transfer his queen into the introducing part of the cage, and leave the mailing portion, with the wire cloth removed, exposed to robbers.

## THE NEW CAGES FOR MAILING AND INTRODUCING.

In our issue for Aug. 15, page 481, we described the form of cage that we were thinking of adopting—a cage that eliminates the old-fashioned method of introducing, and that, while admitted to be the simplest to apply, is probably the poorest of any method that has ever been recommended. Its general adoption by queen-breeders probably arose from its simplicity and convenience.

The push-in-comb-cage plan described in our standard text-books for many years has been acknowledged to be one of the very best. But it did not seem practicable to combine this form of introducing with a mailing-cage. Two separate and distinct cages would increase the bulk of the mailing

package as well as the postage. We solved the problem, as we believe, very nicely by making a wire-cloth introducing-cage just the right size to telescope over the regular Benton cage. We made up a few samples as per engravings here shown, together with



Cage pushed into the comb showing the manner of introducing the confined queen.

queen-breeder should object to taking this precaution; and the probabilities are, if he fails to do so, the bee-keepers of the country will let him severely alone.

GLEANINGS will be glad to publish a list of all queen-breeders who will agree to boil

cartons, and sent them out to our leading queen-breeders and some others who have made a special study of this method of introducing. We append here a few letters containing suggestions that are worth considering.

*Dear Ernest.*—You've struck it. The new combination of two old things makes, as you say, less danger as to conveying foul brood; but I doubt if that is its greatest value. The Benton is a good shipping-cage, but not at all convenient as an introducing-cage. There is not room for it between combs without leaving out a comb, and in most hives there is not room for it over top-bars, and danger that the queen may not be released in the latter case. With the present combination the shipping-cage is just as good as ever, and the introducing-cage of the best. With reasonable instructions the merest tyro can hardly fail at introducing. There is plenty of room for the cage when the frames are shoved close together in regular place.

Marengo, Ill.

C. C. MILLER.

The new type of mailing-cage is a distinct advance. In construction it may be subject to some modifications, as, for instance, on the back a hole for putting in the queen and attendants. It will prove hazardous to try to pass them under the points of wire of the edge of the cover. The cover should be deeper (say  $\frac{3}{8}$  in.), and it may be helpful to have it a little smaller, and have saw-slots in the block to take the edge of the wire cover. This will lessen the possibility of the cover being accidentally slipped off when out of the carton; also of wire points being turned out and puncturing the carton. It is a marvel that the present type of cages has been allowed by the postal authorities. The sharp wire edges and often leaky, sticky candy-holes, are an outrage, and the sooner we remedy them the better.

As to instructions for introducing, trouble is to be looked for from many a novice, as picking up a queen, even from a window-pane, is a fearsome act.

queen will use their food in an emergency; but this may cut very little figure either way.

Two factors should be emphasized. The colony should not be dequeened more than 24 hours before the queen is introduced, or the queen should be put on a comb containing eggs—taken from some other colony—and that put into the colony to be requeened. Queen-cells should be destroyed as a matter of policy, although the comb of eggs often causes the bees to tear them down. Their reaction to the presence of eggs, however, varies, perhaps, according to the age of cells. I have not followed this far enough to state positively.

A full quarter-inch is little enough to push the cage into the comb, particularly if it cuts any unsealed cells. The queen will be free in from eight to twenty-four hours.

Providence, R. I.

ARTHUR C. MILLER.

Well do I remember the Peet cage of a quarter of a century ago. It was a grand cage for introducing queens, but a poor one for shipping. Your idea of combining this method with the Benton cage is a good one. I suggest that you provide for plenty of ventilation in your new model, for I am now fully satisfied that the cages as now made do not allow sufficient air. For about two months I have been tacking a piece of pasteboard, about  $\frac{1}{8}$  inch thick, near each end of each cage before bunching them together.

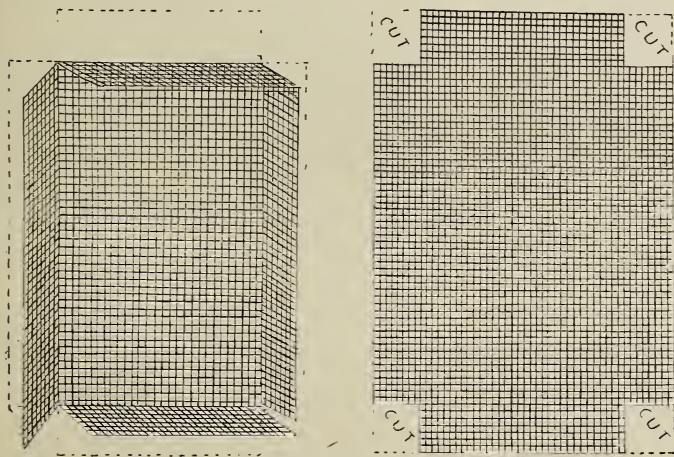
If a customer wants a dozen queens I make two bunches of six cages each, and these little pieces of cardboard holding the cages apart allow the air to pass all over the wire cloth as it should, especially during hot weather. Before adopting this method of packing I lost several queens; but since I have been mailing queens packed as above described I have had remarkable success.

This one little knack of providing extra ventilation has saved me many dollars; therefore I suggest that, if you inclose the cage in a carton, you so arrange it that the bees may have plenty of air. When the wire cloth is telescoped over the cage I see no way in which to put the queen and attendants into the cage, as the wire cloth telescopes over the cage so as to cover the hole in the end of the cage; therefore I suggest that you provide a door somewhere. J. P. MOORE.  
Morgan, Ky.

One or two of our queen-breeders have called attention to the difficulty of getting the bees and queen in the new form of cage. Experience shows us that the hole will have to be located on the bottom of the cage, and not on the sides or ends, as shown in the cuts. The hole in the bottom should be covered with perforated tin as before.

Mr. A. C. Miller calls attention most forcibly to some of the glaring defects of the old mailing-cage. Some of these de-

fects, as will be seen, are removed entirely in the new form of cage. For example, in the new style the feed can be sealed in much better. If there is no hole where the bees eat out the candy, there will be no leakage except where the bees can get at it and lick it up. It is strange that Uncle Sam has not made trouble for us before, on account of leaking candy in mailing-cages, especially



The manner of folding the cage.

Wire-cloth corners cut out before folding to make the introducing-cage that telescopes over the wooden part.

to most of them. The escaping workers, I think, will many times be allowed to fly away rather than be killed. The possibility of infection from them when so liberated is very slight, however.

The caging is quite as good if done over honey, pollen, and empty cells as over emerging brood; and this is rather better in some ways, as the queen may lay if cells are polished, and a lot of youngsters crowded under the cage occasionally exhaust the food supply. Feeding through the wire is uncertain. I have sometimes thought I gained by including cells containing unsealed larvæ, as the



cages sent out by beginners who make the candy too soft.

A number have objected to the new style of cage, saying it requires three cents postage in place of two as formerly. The samples sent out where we used the old cage as a matter of convenience were merely to illustrate the idea. It will be very easy to reduce the size of the cage, and make it deeper than the regular standard two-cent-postage Benton mailing-cage. From our correspondence thus far received, the majority would make the wire-cloth introducing part deeper, and to that end we have made up some new cages that are  $\frac{3}{4}$  inch deep—that is, the wood part—and the wire cloth  $\frac{3}{8}$ , as Mr. A. C. Miller suggests. This would make a cage weighing  $1\frac{1}{2}$  oz., including the carton. The one we have in mind now is  $2\frac{1}{2}$  by  $2\frac{3}{4}$  by  $\frac{3}{8}$ , outside measure, including the carton with ample means for ventilation. Such a cage will easily go at two cents postage.

But some object, saying the penny-postage size of cage is large enough for sending queens ordinary distances; that when one sends out hundreds of queens the item of extra postage would be considerable. Let us see. Very few queen-breeders sell as many as a thousand queens. Suppose the average of these sell a thousand. Their extra postage would be \$10.00 for the season. If their customers and friends introduce a much larger percentage of queens, the queen-breeder would be that much the gainer for next year's business. In other words, the \$10.00 extra investment should be charged up to some mighty good advertising for next season.

But there is one more objection to the push-in-comb-cage plan of introducing—namely, it requires some work; that the beginner may lose the queen during the transfer from the mailing part of the cage to the introducing part on the comb. That depends on the kind of directions that are sent out. How would these directions do?

On receipt of the queen go to the hive where you propose introducing her, and remove the old queen, and before the bees discover that the old mother has gone, cage the new queen among them. To do this, select a comb containing hatching brood, eggs, and cells of honey. Find a spot on the comb where there is hatching brood, eggs, and cells of honey contiguous in a spot about the size of the cage. If there is no hatching brood, cells of pollen and honey will do very well. Shake the bees off the comb and carry comb and queen received from the mails into the house before a window.

Gently raise the wire-cloth top that telescopes over the wood part until it is almost off. Wait a few moments until the queen works her way upward on to the wire cloth; then quickly lift the wire-cloth cage off the wood part and shove it on to the selected spot on the comb. But suppose that, during the operation, she flies. Don't get excited. She will quickly go to the window, where it will be easy to cage her by gently slipping the wire-cloth introducing part over her. The next operation is to slide a postal card between the wire-cloth cage and the window, being careful not to pinch the queen in the operation. Lift cage and all with the postal card away from the window, and lay both on the comb. Gently draw out the postal card until the queen crawls on the comb, then shove the wire-cloth cage down into the comb until it is almost to the midrib. In doing this, care should be exercised so there may be no gaps at the corners where the wire-cloth sides and ends are folded down.

In from 24 to 48 hours the bees may tunnel under

and release the queen. If at the end of 48 hours the queen is not out, she may be released by pushing a pencil through the comb from the side opposite where the queen is caged. In an hour or so the queen will find her way out easily. We believe it important that she should have her liberty when conditions in the colony are entirely normal. A disturbed colony, or one that is opened up and pulled to pieces, is much more apt to ball a queen than one that is going on with its regular routine.

The generous responses we have received from queen-breeders generally indicate a spirit of coöperation. As soon as we get the details of the cage finally worked out we shall have some illustrations showing the perfected cage. In the mean time we seek advice from bee-keepers and queen-breeders generally; for in the multitude of counselors there is safety.

## BLACKS GATHER MORE HONEY-DEW THAN ITALIANS.

BY G. W. BULLAMORE.

A wish was expressed by Dr. Miller, page 32, Jan. 1, for proof that Italians bees are less likely to gather substitutes for floral nectar than the blacks. I have not kept notes, but can recall some recent evidence. The rule seems to be that in time of scarcity the blacks make a keen search locally for any thing, and the Italians go further afield in quest of the genuine nectar.

I got the first hint from the 1905 A B C of Bee Culture, where it is stated that the Italians will store honey while the blacks do nothing but work the sugar-barrels.

In the *Bee-keepers' Record* for March, 1910, a writer states that his blacks stored honey-dew heavily the previous season when a stock of Italians gave supers nearly free of it.

W. G. Hutchinson, page 668, Oct. 5, 1910, finds that Italians store beautiful honey when blacks and hybrids store cane syrup. He also states that, years ago, when he fed raw sugar, the blacks and hybrids came to it but not the Italians. Only under pressure of famine would these latter store such a substitute.

The late Rev. G. Raynor recorded in *British Bee Journal*, Vol. VII., that his Italians stored honey from sea-lavender three miles distant (five miles by road), when the blacks were killing off the drones and were storing nothing.

In Hawaii half the crop is aphid honey-dew. I can not trace the item, but I believe that the blacks are the better bees there, and that some Italian stocks that were introduced stored less than the blacks.

T. B. Mowry says, page 701, Nov. 1, 1910, "the bee-hunters never find an Italian colony with any honey worth mentioning." If the Italians fall back on their stores when the blacks resort to honey substitutes it would help to account for what the bee-hunters notice. But these latter items are applications of the rule rather than proofs of it.

My own experience is that Italians do not



gather honey-dew, and that the mongrel bee that we call black varies in this respect. To know any thing of the actual black bee I am some fifty years too late. It has ceased to exist over here.

I think the evidence adduced is sufficient to justify enquiry. If any facts are known which tell heavily against my statement I shall be glad to alter my views.

#### BEES AND BLACK CLOTHING.

Many of the instances given to illustrate the tolerance or the dislike that bees show for black clothing merely illustrate the fact that bees do not molest a familiar object, and do resent the intrusion of an unfamiliar one. An old farm laborer from whom I purchased a stock of bees told me that he was quite safe in his working clothes; but when he donned a black coat on Sunday the bees invariably attacked him when he passed the hives. I think the bees would have tolerated the black coat if he had worn it all the week.

There are facts which, however, will not admit of this explanation. My white cats go fearlessly among the hives, and are not molested. Colored cats are not tolerated, and get scared away for good while they are kittens. The editor mentioned the case of the two dogs coming into an apiary. The white dog was not interfered with, but the black one was attacked. Then, again, a correspondent gives the case of a dog that was stung on the black spots while the white parts escaped. I have a theory on the subject which might prove of interest.

On the north side of my extracting-room I have about thirty square feet of ground glass. On the south side, and shaded by a veranda, is about fifty square feet of clear glass. If I bring any bees into this room, the chances are that they try to fly out through the ground glass, and until these windows are darkened they will not fly to the clear glass doors (which can be opened) on the other side. I have also observed bees trying to fly through a brightly illuminated white surface, such as a painted door. I conclude, therefore, that the vision of the bee does not sharply distinguish between white and transparent objects. It follows that a white object moving in the apiary would be inconspicuous. A black object or black spots on a dog, although at a distance which rendered them "fuzzy," would yet remain noticeable, especially when moving.

I have noticed that a white hive on a high stand is a difficult matter for the bees to locate, and a dash of color near the entrance materially assists them. Travel-stains answer the same purpose in time if no help is given.

It might be argued that bees can see white flowers. The majority of white flowers are night flowers, and are fertilized by moths. Although white flowers are visited by the bee, there is still a possibility that the odor directs the bee to a great extent, and that the dark background of the flower is what is actually visible. If bees can associate

honey with a freight car (article on "Robbing" in A B C and X Y Z of Bee Culture) they can probably associate its presence with a floral odor and holes in a green carpet.

Albury, England.

#### PROOF THAT THE ODOR OF BEE-STING POISON EXCITES BEES.

BY O. B. METCALFE.

In GLEANINGS, p. 418, July 15, Dr. Miller and the editor both discuss the tradition that mashing a bee will make other bees angry. Dr. Miller has yet to see any proof of it, and the editor agrees with him provided the bee is so quickly crushed or paralyzed that it has no time to squeal.

Well, doctor, get a little stick, go out into the bee-yard, and very carefully shove the end of it among the bees at the entrance of some hive. Do this so gently that you can push the bees about without their showing any sign of resentment; then slip away just as carefully and take the stick to another hive. At this hive catch several bees and make them sting your felt hat where they will leave their stings. Remove these stings instantly, while the poison-sacs are still full, and press the poison out on the end of the stick. Now go back to the entrance of the first hive, and, as gently as before, slip the end of the stick among the bees, and you will have proof that bees will resent the crushing of a bee provided the poison gives out the smell. A tremor of excitement will spread among the whole guard, and a number of them will jump on the stick which they had slightly avoided before. I knew this before; but I took a witness and went out and tried it for fear the doctor might in some way get me down as he did in the matter of how a queen makes a chirping sound. That was, however, a point of little practical value so far as I know; while the one now under discussion is one of no small importance, and one that every bee-keeper should know.

The following are some of the ways my understanding of this point has been of value to me in the past. When I go to a yard, if there is any work to be done with queens there as well as with the honey, I always do the queen work first, to avoid the use of a veil. This is a point I once cared little about; but I observed that the long use of a veil was injuring my eyes, so now I do not wear one except when I must; and after I have worked fast with the honey for a few minutes, and gotten hat, clothes, and hands fairly stinking with the odor of bee-sting poison, I could never work any thing stronger than a weak nucleus without a veil.

Again, if I expect the bees to fight badly some cloudy day when I must work them, I take more time at some things, and even skip a hive of well-known reputation to avoid getting into a fight that will last until I finish the work. Another point that

should be kept in mind is that, after a horse or a child, for instance, has had several stings, and the bees are on a stinging rampage, considerable care should be taken until the odor of the poison has left it.

A year or two ago Mr. B. B. Fouch, who keeps bees down the river below us, came near losing a fine mare because the bees simply followed her and stung her. They first stung her a few times while loose in the bee-yard, and then, although he took her to shelter, they hunted her out and he was forced to take her down in the field, although they paid no attention to the other horses about. The mare had not been working, and was not sweaty, nor did the bees show any unusual spite toward her.

Last week a neighbor of mine came over to play tennis with me. I had been working with the bees just after dinner, and had not taken a bath, nor had I changed all my clothes. The tennis court is within a few steps of the bee-yard, and no sooner had I come on the ground than the bees began bothering me. I killed them with my racket, and went on playing, although I got stung every minute or so. Finally I called my brother-in-law to come and fight bees for me while I played. He too had been working with the bees, and they made it hot for us both until we finally had to light a torch. As soon as the smoke from the torch filled the air with an odor sufficient to obscure the odor from the bee-sting poison from our clothes, and from the dozens of bees we had killed, the bees ceased to come, and I went on with the game in comparative peace until the smoke died down, and then I had to renew it. The smoke did not drift toward the bee-yard, so it must have been that bees that were out looking for trouble smelled me and attacked me. All this time my opponent across the net had only one bee come near him, and even then it quickly sought me. I cite this simply as an example of bees being antagonistic to any thing having the odor of their poison about it. Do not understand me as being radical enough to think that the odor of a single bee is sufficient to infuriate a whole colony and start it on the war-path. The point is, that every sting means more odor, and that for this reason the trouble may multiply.

So much for proof and value of knowing that bees do resent, in an indirect way, having their comrades crushed. The way I happened to study into this matter came about in this way: Two or three years ago, while I was experimenting with a smelling-tube which I had conceived as an instrument for hunting out foul brood by the sense of smell, the bees bothered me a great deal by stinging it furiously as soon as one bee for any reason had stung it. It was a small rubber tube with a hood attached to one end of it. The small hood fitted closely over my nose, and the other end was run in at the entrance. It took only a short time to learn that, as soon as I had gotten the odor of a bee-sting on the end of this tube, I must stop and wash it before I could go on.

I have abandoned the smelling-tube now, but I have worked out a system for hunting foul brood by the sense the smell, which is of great value to me; and now that I have given it two or three years' test, and have done practical work with it, I mean to write up the method soon. It has two points of advantage which carry such weight that every bee-keeper who is bothered with foul brood should try it. It can be quickly done, and will, for that very reason, be often used. It also has the advantage that it may be done in bad robbing time, and done well enough to catch any colonies which would be dangerous to extract from or to leave standing in the yard.

Mesilla Park, N. M.

### How Far will an Absconding Swarm go?

How far will an absconding swarm go to a home in the woods? I trailed one about a mile and a half, and gave up the hunt at the head of a lake. They flew in a straight line. This swarm issued from a colony that came off the 27th of April. They were placed in a hive with full sheets of foundation and one super. I found that they had filled both, therefore had a good excuse for getting out. This was on the 28th of this month. I would not have lost them, but they issued while I was asleep, and hung on a bush very faithfully for quite a while. They hiked out one minute after discovery. It was one of the largest I have had this season. This made me look around a little, and I found a younger colony had done the same amount of work and was ready to cast a swarm, whereupon I took off the full super and put on an empty one. They do not now show an inclination to swarm. This may appear "greeny" to an old timer, but there is a sequel. I tried the "Alexander plan" last year for keeping down swarming. I had it down pretty fine, and "tiered up" accordingly. I "teared down" when the season was over. I prevented swarming all right, but was caught with a drouth on one hand and a long wet season on the other.

Suffolk, Va.

W. T. BAILEY.

[We are not able to tell you just how far an absconding swarm would go before settling in its new quarters. If this swarm had previously sent out scouts, it is presumable that those scouts would not go much more than a mile or a mile and a half from their old home. Having found their location they would probably lead the swarm when it came out to this very spot, which would probably be within a mile or a mile and a half from the old home. If, however, the swarm should leave without any preliminary scouting of any sort, it might go anywhere from one to ten miles, or even further, depending upon their ability to sustain themselves in the air in flight.—Ed.]

### Poultry-netting over the Fronts of the Hives to Keep Chickens from Eating Bees.

I have had an experience similar to that mentioned in the article entitled "When Chickens are a Nuisance," on page 486, Aug. 15. As I had a few nuclei formed this summer, and found them gathering no honey whatever, and the bees disappearing, I began to seek the cause. There was an opening in each just large enough to let the bees pass one by one, and here my young chicks (three months old) were on the lookout, and caught almost every bee immediately after it came forth. This was easily remedied by putting in front of the hive a piece of  $4\frac{1}{2} \times 3$ -mesh poultry-fence just high enough to prevent the chicks from reaching over. As there are never many bees flying from the nuclei, this, in my judgment, does not hinder them in the least, and the chicks would not tackle a large colony. I would not move the hives.

There are many robber bees that are killed, and others that crawl away and die. All of these are good for chicks to eat, and they like the taste, judging by the way they go after them. They will just as readily eat dead bees as those they have killed. It is true they have to work harder to find bees than capture the ones coming from the hive; but work is what makes a chick hardy.

A. F. DROSTE.





Fig. 1.—D. C. Gilham, Schuylkill Haven, Pa., showing the various steps in wrapping sections of comb honey in transparent paper. Mr. Gilham has followed this plan for some time, and believes that the results justify the labor.

#### WRAPPING COMB HONEY IN TRANSPARENT PAPER FOR MARKET.

BY D. C. GILHAM.

Last season I erected a building 20×40 ft. for a work-shop and storehouse. At each end I partitioned off a space 10×12 ft. for a room, one of which is my office and the other the honey-room, in which I put up my honey for market. The woodwork in both these rooms is finished with a mixture of beeswax and turpentine, and all who have seen the result think it is very nice.

Wrapping each section of honey in transparent paper may seem like a lot of work to some bee-keepers; but after following the plan for some time I have come to the conclusion that the results justify the labor; furthermore, I can do the work in very much less time than when I began. The papers that I use are of good paraffined stock, and on one side, properly located from the edges for folding, my name and address are printed in green letters under a picture of an old straw skep.

When ready to wrap my honey, the first thing I do is to lay the cartons or wrappers on the table, face side down, and fold over one edge of the paper at the proper place. One must know just where the bend must come; for instance, I turn over the edge of the paper until it meets the first letter in the word "Apiary." This first fold, I believe, is necessary in order to make a tight wrapper.

I then take a section of honey, place it on the carton, and bring the paper up over it, the first fold preventing the carton from slipping around the section, thus making it possible to draw the paper tight. I use a little paste to hold the wrapper in position

until I can put on the binder tape. A very small quantity of this paste, made from dextrin, is all that is necessary, as it sticks very tight. Finally I fold the ends down, using a little dextrin to hold them, and the section is ready for the binder, which prevents all leakage in case the comb should be broken so that the honey runs out. I prefer to put up several dozen sections and then put the binder on all of them at once. I believe that two persons could work more than twice as fast, although I have never had any help.

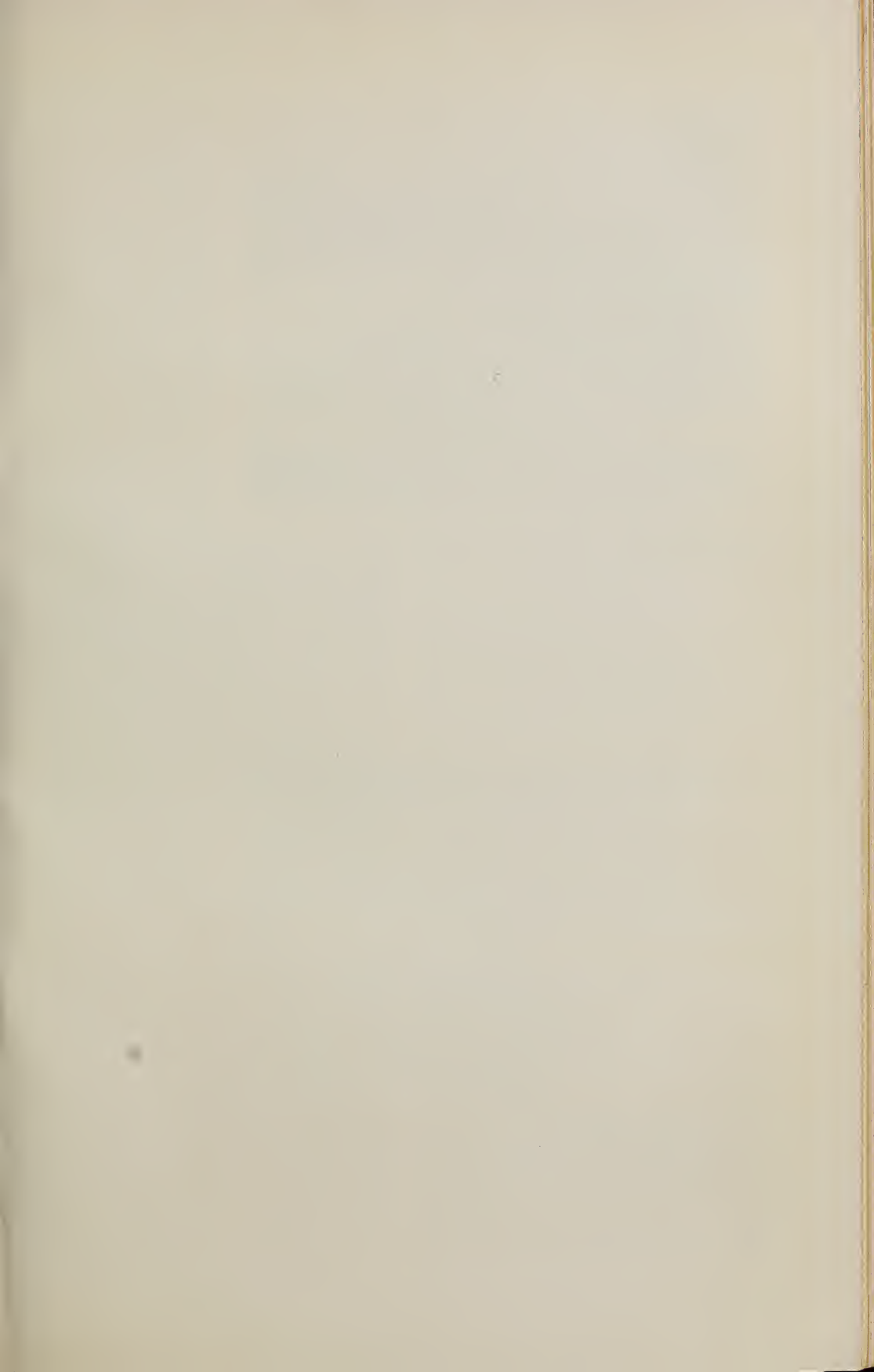
There are several different styles of binding-machines, but I think all of them are on the same principle. The roller-moistener is filled with water, and dampens the felt cover in revolving. Thus as the adhesive paper passes over it, it is moistened ready for the package. To get the required length of tape necessary, I lay my rule in front of the machine and draw the end out the proper distance, then raise my left hand while holding the tape, and tear it off at the knife.

Schuylkill Haven, Pa.

[The plan of enclosing comb honey with a transparent wrapper has been suggested before. On page 1500 of the December 1st issue for 1907, Mr. H. A. Sackett described and illustrated a similar wrapper. Among the advantages mentioned was the protection afforded the honey from the dust, flies, etc., while the honey itself showed through the paper very distinctly. An objection to these wrappers was made some time ago by a large dealer who claimed that, while they might be all right for retailing comb honey, they would not stand shipment very well, as a little leakage causes the papers to stick together to such an extent that they are torn to pieces as sections are removed from the shipping-cases. If we understand our correspondent, he does not ship his honey, but









Cellar built entirely of concrete, including floor, walls, and roof.

## CONCRETE AN IDEAL MATERIAL FOR BEE-CELLARS.

BY W. W. SMITH.

[Concrete is rapidly coming into practical use by owners of permanently located apiaries. As a hive foundation and stand it has no equal, and it is not expensive when the saving of good lumber is considered. However, its greatest value lies in the construction of cellars. A gravel bank furnishes an ideal place for such a cellar; for the material excavated, when mixed in proper proportions with good cement, makes a permanent wall that is water-proof, sound-proof, and almost cold-proof, and at a cost of but a trifle more than wood. The following article by an expert on cement will be helpful, as it gives the proportions necessary when using different kinds of material.—ED.]

Concrete is fire-proof, and, consequently, an ideal material for keeping out either heat or cold. Since well-proportioned thoroughly mixed concrete is water-proof, concrete bee-cellars may be built entirely or partly in the ground as the severity of the winter or the requirements of the location may necessitate. Thus the regulation of the temperature in winter or in summer is merely a matter of opening and closing the ventilators.

The cellar shown in the photograph is 5 feet below and 2 feet above ground level. The walls, roof, and floor are all 5 inches thick, and of a concrete proportioned one part Portland cement to  $2\frac{1}{2}$  parts sand and five parts crushed rock. A concrete of one part cement to 5 parts clean bank-run gravel would have done as well.

With team and scraper the pit was excavated to allow working room for building the cellar 8 by 10 feet in the clear. The dirt was dragged up the incline upon which, later, were built the cellar steps and hatchway. The floor was laid first. Box forms for the side walls were then erected. These forms consisted of inch siding on  $2 \times 4$ -inch studding spaced 30 inches. The walls were rein-

forced, within  $1\frac{1}{2}$  inches of the inside, with heavy woven-wire fencing, with no mesh larger than 6 inches.

The wire fencing was held in position at the bottom by imbedding it in the concrete floor, and at the top by two long staples driven tightly into the form, one over and one under the wire. By use of a thin plank for spading between the wire and the inside form while placing the concrete, the reinforcement was kept in its proper position, and likewise a smoother surface finish was given the face of the walls. A foot extra

length of wire was allowed to project above the side and end walls at the top, and was used later to tie these walls to the roof.

The roof forms were shaped so as to give the roof an arch rise of two feet in the center. These forms were securely fastened to the  $2 \times 4$ -inch studding of the wall forms, and were also braced in the center to the solid floor beneath. (If preferred, a peak roof would do just as well.) After the side walls were 7 days old, the roof was begun. It was reinforced with the same kind of wire placed crosswise and within  $1\frac{1}{2}$  inches of the under side. In building the roof,  $1\frac{1}{2}$  inches of concrete was first placed on the roof form. This layer of concrete was slightly wider than the width of fencing used. The wire reinforcing was then laid on the concrete, and the remainder of the concrete in the roof put directly on the reinforcement. This work was done rapidly, and the entire roof was finished without stopping, so as to avoid the possibilities of leaks through faulty seams in the concrete.

Sections of ten-inch sewer pipe, bell end up, were placed in position while the arch roof was being constructed. Galvanized sheet-iron hoods were afterward added to these ventilators. The wooden supports of the roof were not removed for 20 days. In the meantime the earth has been tamped back into place against the outside walls.

The side walls of the hatchway were built first, and, after the forms were removed, the steps proper were made with a rise of 7 inches and a tread of 10 inches. Five-eighths-inch bolts 8 inches long, partially imbedded in the concrete, hold the framing for the hatchway door. The frame for the cellar-door proper was set in between the forms before the latter were filled with concrete.

### MATERIALS REQUIRED.

Eleven cubic yards of crushed stone,  $5\frac{1}{2}$



cubic yards of sand, or 12 cubic yards of bank-run gravel, and 15 bbls. Portland cement.

One striking advantage of these cellars is that rats and mice can not gain entrance to them. Not only do they afford ideal storage conditions for bees in winter, but also serve as a cool place for many other purposes in the summer.

Philadelphia, Pa.

[We should judge that a cellar of the size mentioned, 8×10 feet in the clear, would be about right for wintering from 30 to 40 colonies in ten-frame hives, since it is usually conceded that 100 ten-frame colonies require a room at least 12×15 or 16 feet.

The only suggestion that we have to make is that a side hill be selected if possible. A colony of bees, especially in the fall, when it is heavy with honey, is no light affair by any means, and steps or stairs greatly increase the amount of time and labor required for moving the bees in or out.—Ed.]

## OUTDOOR WINTERING IN NEW YORK.

BY PERCY ORTON.

For cellar wintering here, we make sure that the combs contain plenty of honey, then put over the top-bar a Hill device and two thicknesses of *clean* burlap. The chaff-tray, 12 inches deep, is filled either with chaff or planer shavings; over the top of the tray there is ventilation, which is one of the most essential features in connection with outdoor wintering in this locality. The wooden covers are protected by tin, well painted.

Fig. 1 shows the cover and chaff tray removed from a hive and set to one side. Fig. 2 shows Caucasian bees flying from the tops of the brood-combs after the covers and packing were taken off. The Caucasians will fly in this way and return without loss, even when snow is on the ground. The Italians do not seem to be able to stand the cold. We have plenty of snow every year that lasts until late in the winter.

We have found that the deep chaff-trays, over burlap, with ventilation above, give better results here than sealed covers under the tray. My experience covers fourteen years of outdoor wintering with blacks, Italians, and

Caucasians; the latter are more active, fly when it is colder, gather more honey (also propolis), sting more after the honey-flows are over, and are the poorest comb-honey builders.

Northampton, N. Y.

## TWO QUEENS TO INSURE PLENTY OF BEES FOR THE HONEY-FLOW.

A Double Colony Separated by only a Screen.

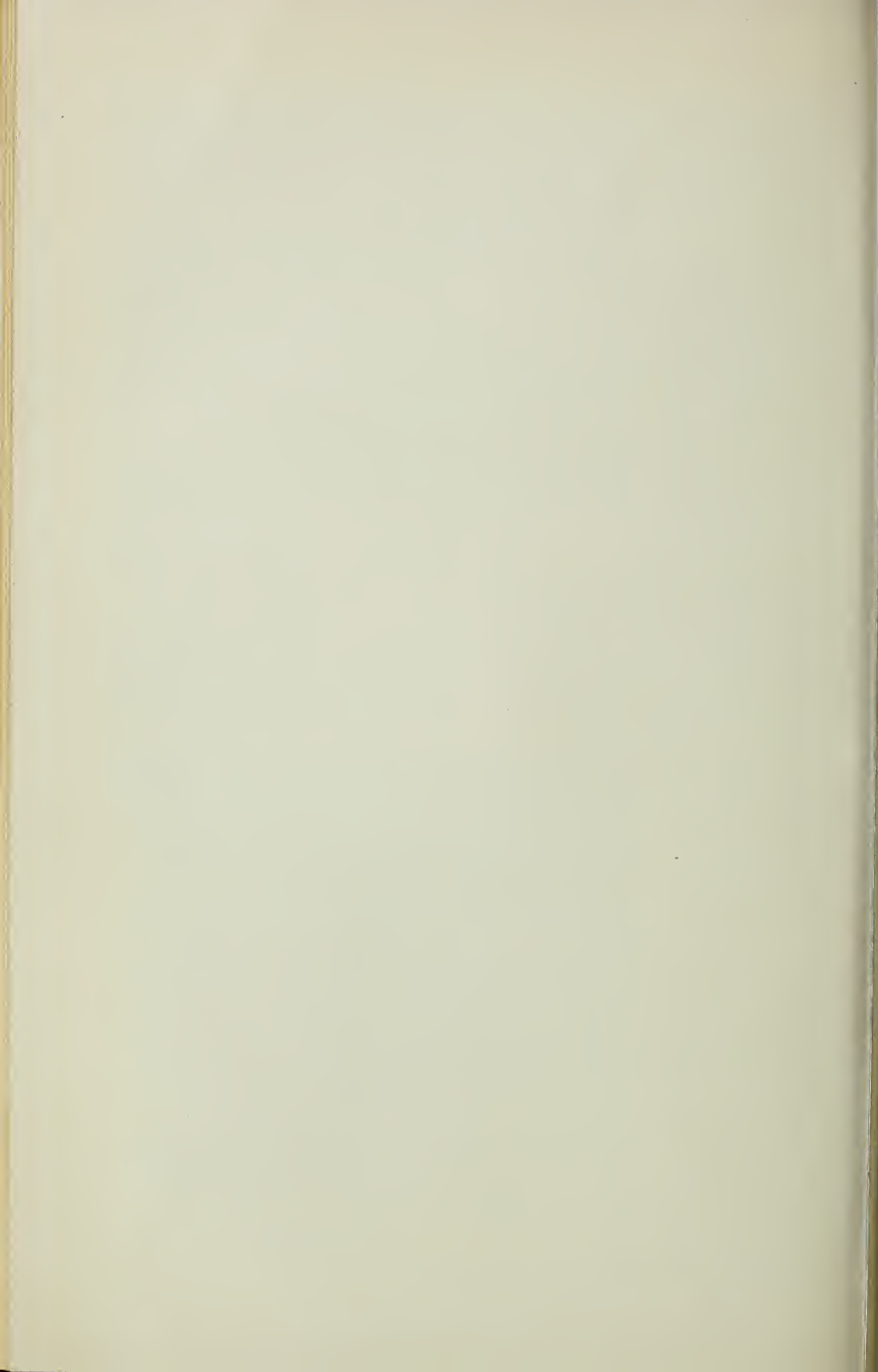
BY GEO. W. RICH.

The plan of keeping two queens in a hive with two entrances is a success with me; but it has no advantage except in early brood-rearing. All apiarists know that, in a heavy honey-flow, one queen furnishes all the brood, and sometimes more than needed to keep a full supply of bees; but just before the honey-flow, one can hardly have too many bees; hence the advantage of the two queens. In this locality the honey-flow begins from the 1st to the 15th of May. So, in order to work my plan one would have to order his queens from some one in the South, so as to have them by March 15th. By that time here, almost all colonies will have from three to four frames of brood or more.

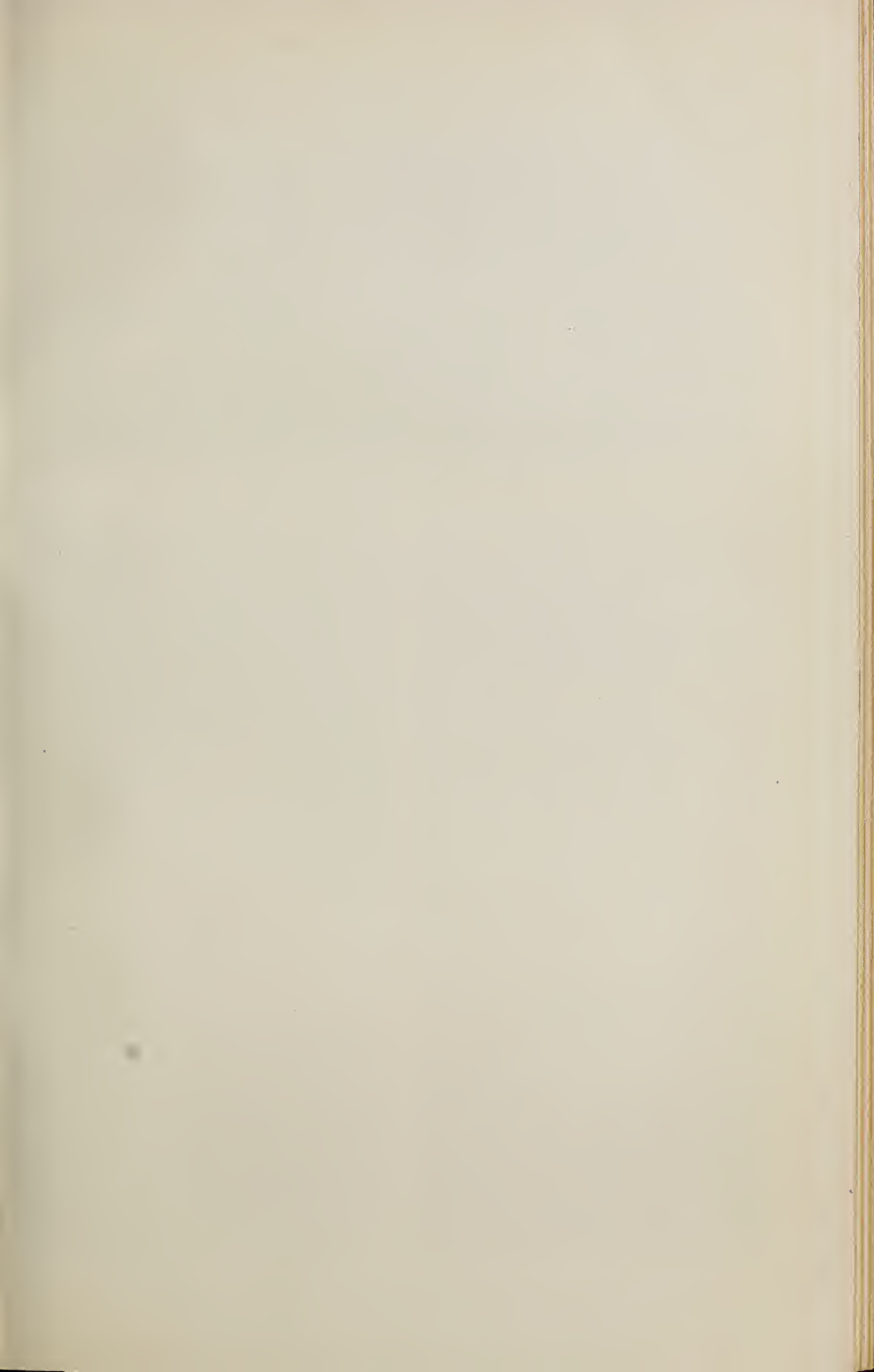
In each hive to be worked, shake all the bees off three or more frames of brood, and put them in an empty hive-body, with enough frames of combs containing some honey to fill the body. In place of the three frames of brood, insert three empty combs. Over this first hive put a wire screen and

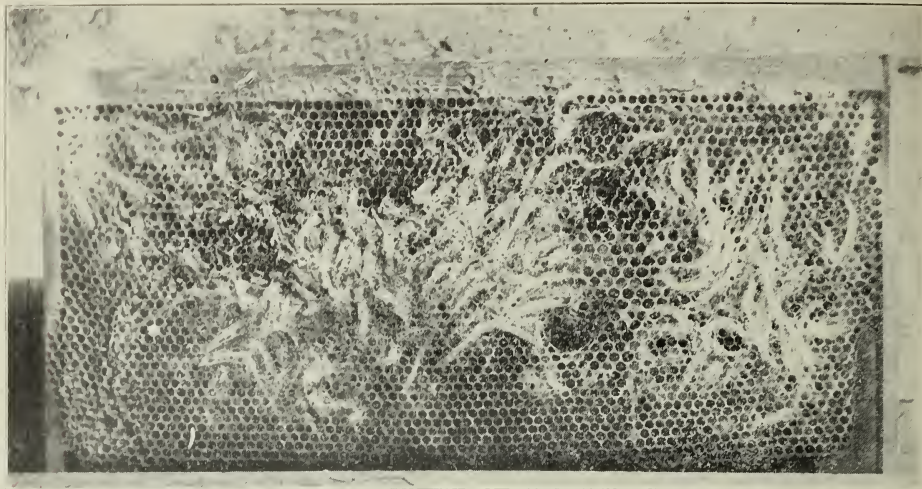


Fig. 1.—Orton's deep chaff-tray removed from the hive. Over the top-bars of the frames a Hill device is placed; and on this, two thicknesses of burlap.









Work of the Mediterranean flour-moth.

I have mentioned before how I have advertised in the local paper here this fall. The results were very satisfactory. I sold 50 lbs. to a man in North Dakota. He used to live here, and still took the paper. I also sold 40 lbs. to a man in Massachusetts in the same way. All of this was put up in one-gallon cans. From my one year's experience I think very highly of the local-paper advertising. The expense for several months was not much over \$5.00—a mere bagatelle compared with the results; and I recommend this way of advertising to any one who wants to work up his home trade, for such business is all cash and no waiting, and producers can thus reach the customers direct. It would not mean a very great expense to take quite a number of village and city papers within, say, fifty or one hundred miles, and I am satisfied that advertising in them would mean a big surprise.

The honey-dealer is all right. He will pay more if the price goes up, or if he has to—he is human. As a rule, honey-dealers are reliable people—at least according to my experience.

Randolph, N. Y.

#### THE MEDITERRANEAN FLOUR MOTH INFESTING COMBS.

BY WESLEY FOSTER.

Every fall and winter many combs stored in our shop or outyard bee-houses become infested with the larvæ of a moth, gray in color but smaller than the wax-moth. The larvæ seem to be very fond of the pollen, and the pollen-filled combs are just covered with the webs, and larvæ crawling through them. The larvæ do not cut through the wax-cells, but extend their webs along the surface of the comb, and are often found down in the cells, to all appearances eating

the pollen. They are about half an inch long, and slightly pinkish in color. The moth is gray, and about the same length. I have found hundreds of the larvæ in their web-constructed channels or long narrow passageways between the division-board and the side of the hive. In fact, they will rarely be found between combs unless they are very close together. I have gotten rid of them by spreading the combs an inch or two apart, though the best way is to put the combs over a good strong colony of bees.

Prof. Gillette informs me that the moth is probably the Mediterranean flour-moth, *Eupestia kuhniella*. I have found worms very similar to these larvæ in packages of old, spoiled, rolled oats, and they are probably the same. When we first came to Colorado we thought we had the regular Eastern wax-moth (and they do show up here once in a while), but they can not gain much headway on account of the dry atmosphere.

Boulder, Col.

#### REPORT OF THE PENNSYLVANIA STATE CONVENTION.

BY H. C. KLINGER.

The summer meeting of the Pennsylvania State Bee-keepers' Association was held in Reynoldsville, July 11 and 12. This town is located at the foothills of the Allegheny Mountains, and has in its vicinity a number of enthusiastic bee-keepers.

The presiding officer was Dr. H. A. Surface, Economic Zoologist, Harrisburg, Pa. Hon. S. B. Elliot, of the town, welcomed the bee-keepers in well-chosen words. Several of the sessions were public demonstrations, and were held in a little grove on the lawn of A. M. Applegate.

The chairman of the legislative commit-



tee, Wm. A. Selser, reported the bill given below. Four years and two years ago similar bills were ridiculed and laughed down by the legislators. This time there was a more concerted action among the bee-keepers, and the bill became a law without a struggle. Every member of the association was notified to write his representative, and the committee personally went among the members and interviewed them.

#### AN ACT

To supplement an act passed by the General Assembly, and approved March 31st, 1905, entitled, "An act to provide for the protection of trees, shrubs, vines, and plants against destructive insects and diseases; providing for the enforcement of this act and the expenses connected therewith, and fixing penalties for its violation;" to provide for the inspection of apiaries, and for the suppression of contagious or infectious diseases among bees, and making appropriation therefor.

SEC. 1. Be it enacted, etc., that on and after the passage of this act it shall be unlawful for any person or firm or corporation to have or keep in its possession or in any apiary any colony of bees infected by the disease known as American or European foul brood, or by any other disease which is contagious or infectious in its nature, and injurious to honey-bees in their egg, larval, pupal, or adult stage; and any person or firm or corporation so having in his or their keeping, or in his or their possession, any colony of bees infected, after notice of the existence of such disease has been given as hereinafter provided, shall be liable to a fine of twenty-five dollars, to be imposed and recovered as hereinafter provided.

SEC. 2. It shall be the duty of any person, firm, or corporation, in the State of Pennsylvania, engaged in the rearing of queen-bees for sale, to have his or their apiary inspected at least twice during each summer; and it shall be unlawful to ship from such queen-bee-rearing apiaries any package or parcel containing queen-bees without having attached to it a certificate from the Secretary of Agriculture, giving the date of the last inspection, and containing the statement that the apiary in which such queen-bees were reared was, at the time of such inspection, free from American or European foul brood, or other discoverable contagious or infectious disease. Any person violating the provisions of this section shall be liable to a fine of fifty dollars, to be imposed and recovered as hereinafter provided.

SEC. 3. It shall be the duty of the Secretary of Agriculture, through the Economic Zoologist, or such other agent or agents as he may select, to investigate or cause to be investigated all apiaries or other places where bees are kept or raised in Pennsylvania; and to study and investigate, or cause to be studied and investigated, all apiaries or other places where bees are kept or raised in Pennsylvania; and to study and investigate, or cause to be studied and investigated, outbreaks of bee diseases and other conditions unfavorable to development of bees within the State. It shall also be the duty of the Secretary of Agriculture to investigate all complaints of the existence of diseases of any kind in apiaries or other places where bees are kept, and to cause inspection to be made at least twice in each season, when requested by the owner, of apiaries where queen-bees are kept for sale. It shall further be the duty of said Secretary of Agriculture, wherever he finds any apiary, where queen-bees are raised, free from foul brood or other discoverable infectious or contagious diseases, to furnish the owner of such apiary with a certificate stating that fact, and such certificate shall state the date beyond which it will not be effective.

SEC. 4. Whenever, in the course of the inspections or investigations made or carried on, as provided in this act, by the Secretary of Agriculture or under his direction, said Secretary of Agriculture shall become aware of the existence of American or European foul brood or other contagious diseases in any apiary or colony of bees, it shall be his duty to notify forthwith the owner or owners, or manager, of such infected or diseased apiary or colony of the character of the infection, and give directions for the treatment, both with respect to the manner of such treatment and the time within which it shall be employed or applied, which time shall not be more than eight days after the service of the notice; and in case of doubt, where the pres-

ence of disease is suspected, but can not be definitely determined because of the character of the hives used, said Secretary of Agriculture may, at his discretion, order any owner of bees in box hives without movable frames to transfer such bees to movable-frame hives, to facilitate inspection and supervision. It shall thereupon be the duty of the owner, owners, or managers, upon whom such notice and order is served, to comply with said notices in all respects, within the time limited in said notices; and any person receiving such directions and notice, who neglects or refuses to comply with the same, shall be liable to a fine of fifty dollars, to be imposed and recovered as hereinafter provided; and it shall be lawful for the Secretary of Agriculture to condemn and cause the destruction of such diseased apiary or colony of bees, and all hives or other appliances used in connection with the same; and in case the Secretary of Agriculture, or his agent, is unable to agree with the owner of such apiary, colony, or appliances as to the amount to be paid for the same, three disinterested appraisers shall be appointed—one by the Secretary of Agriculture or his agent; one by the owner, and the third by the two so appointed, who shall, under oath or affirmation, appraise such property so condemned, taking into consideration its actual value and condition at the time of appraisal; and such appraised value shall be paid to the owner of such apiary, colony, or appliances by the State Treasurer, upon warrant of the Auditor General, which shall be issued upon the presentation of properly executed vouchers after the same have been approved by the Secretary of Agriculture.

SEC. 5. It shall be unlawful for any owner or other person having diseased bees or their larvae, or infected hives or combs, or other appliances or utensils for keeping bees, to expose, sell, barter, or give away, or allow the same to be moved, until after treatment is prescribed by the Secretary of Agriculture or his agent, and the same has been applied; and it shall be unlawful to expose, sell, barter, or give away such infected bees, larvae, hives, or combs, or other appliances, after treatment, until such materials are declared safe, and permission is given by the Secretary of Agriculture for such removal. Any person violating any of the provisions of this section shall be liable to a fine of fifty dollars, to be imposed and recovered as hereinafter provided.

SEC. 6. For the purpose of the investigations and inspections specified in this act, and to enforce the provisions of the same, the Secretary of Agriculture or his agents shall have free entry upon or into any apiary or premises where bees are kept, or where infected hives or combs are liable to be stored; and any interference with, or obstruction made to prevent, such entry, shall subject the offender to liability of a fine of one hundred dollars, to be imposed and recovered as hereinafter provided.

SEC. 7. Any person violating any of the provisions of this act, upon conviction thereof before any justice of the peace or alderman, shall be sentenced to pay the costs of prosecution and to forfeit and pay the fine provided for in the section violated; and, in default of the payment thereof, shall be committed to and imprisoned in the county jail of the proper county for a period not exceeding one day for each dollar of the amount of the fine imposed. All fines imposed and recovered under the provisions of this act shall be paid by the justice of the peace or alderman, before whom the conviction is had, to the Secretary of Agriculture or his agent, and by him immediately conveyed into the State Treasury.

SEC. 8. Appropriations of the amount necessary for carrying out the provisions of this bill shall be made by the General Assembly of the State, at the time of making appropriations for the general expenses of the Department of Agriculture.

Approved the 5th day of May, 1911.

JOHN K. TENER,

The foregoing is a true and correct copy of the Act of the General Assembly, No. 140.

ROBERT MCAFEE,

Secretary of the Commonwealth.

Geo. H. Rea gave several demonstrations on handling bees in practical work, and in apiary inspection.

Wm. A. Selser showed how to handle bees for exhibition. This was amusing for the audience. In order to be successful it is

necessary to get rid of the field bees first, then put them in a demoralized condition, after which they can be picked up by the handful, and thrown on the bare head or body without fear of stinging.

Dr. Surface spoke on the equipment for an amateur. A beginner should start with only three or five colonies, and the increase of his apiculture should be in comparison with his knowledge of bee-keeping. There is no better strain than the Italian. He prefers the eight-frame hive for a quick flow, and the ten-frame for a continued flow.

Mr. Selser gave an illustrated lecture on late developments in apiculture which was a treat.

The subject of foul brood was taken up by Messrs. Rea and Selzer. It was shown how to detect it, how to distinguish between American and European foul brood, and how to cure it. This subject caused quite a discussion. A number of those present had had experience with it. One member said his yard was infected with European foul brood, and it cured itself by the introduction of vigorous Italian queens. The different methods of eradicating the disease were fully discussed.

S. P. Christian spoke on improving stock, following a paper on the same subject by Penn G. Snyder.

A demonstration of transferring was given by Dr. Surface and the secretary. A colony in a store-box was brought in, and the bees (combs and all) were transferred to a movable-frame hive. With one exception there were no stings received in all the demonstrations, although they were made without gloves or veil.

In one of the resolutions of the convention the members refer to the former editor of *The Bee-keepers' Review*, Mr. W. Z. Hutchinson, as an indefatigable worker, and speak of his services to mankind, and especially to the bee-keeping world. They sincerely regret his loss, and extend their sympathy to Mrs. Hutchinson. Mr. Hutchinson had been invited to this meeting, and the letter from the secretary reached his home a few hours after his death. He had answered the call to a greater meeting.

Liverpool, Pa.

### PROPOLIS; ITS ORIGIN AND USE.

An Extract and Translation of Dr. M. Kuestenmacher's Work on Propolis.

BY F. GREINER.

The ancient writers of Greece and Rome knew about as much about propolis in their times as we do to-day, and it must, therefore, be hailed with satisfaction that, in an attempt to bring order and light out of chaos, Dr. M. Kuestenmacher has made of late some scientific investigations, and his conclusions seem to upset all old-time theories.

Before entering upon the subject proper, let us stop a moment at the word "propolis"

and see what the word implies and where it originates. *Pro* means *before*, and *polis* means city—both Greek words—a city before a city, a bulwark, or something to fortify the treasure within. The ancients thought that the whole bee-organization was surrounded by a coating of propolis. They even distinguished between three distinct and different layers. Their mistaken idea was that a new swarm would first coat the inner surface of their hive or habitation with propolis before building any comb.

Without dwelling upon what Dr. Kuestenmacher has to say about wax and honey I will try to give in plain language, omitting all scientific terms, etc., which would not convey much if any meaning to many of us who are neither chemists nor naturalists, what this distinguished gentleman says about propolis.

Ever since the ages of antiquity, both naturalists and professional bee-keepers have held that propolis is gathered direct from certain buds by the bees, and carried to the hive in their pollen-baskets like the pollen. Modern bee-journals give us lists containing the names of different plants furnishing pollen, honey, and propolis in their respective amounts. Dr. K. has come to conclusions altogether different. He says propolis is the oil or balsam covering all pollen-grains, but intermingled with other substances such as wax, old worthless pollen, and refuse generally on hand in the hive. This balsam is of a yellow to red color, seldom colorless or of an odd color. The pollen grains are thinly covered with this balsam, and thereby slightly protected against moisture. The sticky nature of the covering favors the pollen-grains adhering to insects for the purpose of distribution as well as their taking a lodging upon the stigma of some other blossom. Large quantities of pollen are gathered by the bees, and used for preparing food for larvæ. They collect them as follows: The bee uses alternately first one fore leg and then the other, brushing the ripe pollen from the anthers against the under side of her body where they lodge in the covering of hair. This process can easily be observed on blossoms with prominent stamens. When it is not possible to dislodge the pollen in this manner, the bee resorts to harsher treatment, using her mandibles first, to tear the pollen masses apart. The bee then moistens the brushes of her anterior legs with saliva, passes them over head and thorax, and brushes what pollen adhered here downward. The combs and brushes of the middle legs mass the brushed-together pollen into flakes, and finally pack them into the pollen-baskets of the posterior legs. The abdomen is cleaned by the brushes of the tarsus of the posterior legs; and what is collected by one is always pressed into the basket of the other. When a load has been collected the bee returns to the hive, backs into a pollen-storing cell, and pushes the pollen into it, using her middle legs for that purpose. In the combs the pollen of different colors are mixed indiscriminately, al-



though in gathering the bee is very particular to gather pollen of only one color.

The bees that prepare food for the larvae are styled nurse-bees, and are recognized by their plump appearance, their nimbleness, and gentleness. They are about ten days old when best adapted for this work. They take much pollen into their stomachs, and with it they require even more water to soak it up, which must be brought by the field-bees. A pollen-grain is more eager to gobble up water than a sponge, and bees may often suffer greatly of thirst. It requires five times as much water as pollen, and for no other purpose do the bees use water. In the same degree as the pollen-grain under the soaking process in the stomach bursts open and liberates an emulsion of albumen, sugar, and oil, small drops of the balsam rise to the upper part of the stomach and are forced out through the mouth, and spit out by the bee. These drops are from two to three millimeters in size. The emulsion is also passed out to younger and older bees, which process of passing it about purifies what we might term the milk, and strains it, removing the pollen-husks.

Under the microscope a fresh pollen grain is perfectly solid, but it soon becomes hollow, and the hollow keeps on increasing. If a drop of water is brought into contact with it, the pollen-grain absorbs it quickly, proving the hollow to be a vacuum. Any pollen-grains which do not absorb water in this manner any more must be considered dead, and are of no special value to the bees. Their specific gravity is less than that of good pollen. They rise to the upper surface in the stomach with the small drops of balsam, and attach themselves to these. The separation of the balsam and the poor pollen seems hastened by the shaking process of the nurse-bees, so often seen; but not all the balsam is separated. Traces remain, and may be found in the intestines and the excrements or voidings, for balsam, like pollen-husks, is indigestible.

When a bee spits out a drop of balsam she never besmears a comb with it, but deposits it on the hive-wall somewhere, in some corner or crevice of the hive. There may be special places where the nurses relieve themselves of the disagreeable matter. The newly deposited balsam might represent the "pissoceros" of Plinius, if, indeed, we are to distinguish between different kinds of the substance at all in one hive, and is the purest found, containing but 5 per cent of pollen. It is fluid in ordinary temperature, and runs down the sides of the hive-walls if the bees should deposit it there in larger quantities. Old hives we find glazed with it.

The color of the fresh propolis is yellow to red; and because the bees in the hurry of their work frequently step into the sticky substance we need not wonder that much of it becomes scattered all over the combs—a fact particularly noticeable with new combs.

The balsam penetrates the wax and gives it the color. While the combs of a young swarm remain white till brood food is pro-

duced, the whitest comb inserted during the breeding season into the center of the brood-nest of an old colony becomes discolored at once.

Fresh propolis must be very objectionable to the bees, as it sticks them up and robs them of their hair. They do not leave it long where the nurses first put it. They cover it over with all sorts of refuse, and work wax into it in order that they may handle it. It is then shifted about to stop or fill holes and crevices.

Many bee-keepers may have believed, or may still do so, that bees use flour if fed to them to prepare brood food. When we take into consideration that bees have carried sawdust, coal dust, and even road dust and other dust into their hives like ordinary pollen, would it be reasonable to say, the bees made those things up into brood food? The fact is, all these substitutes eventually find their way into the propolis. Although spoiled pollen is the principal material mixed with the balsam, we also find ceresin and paraffin by the side of the wax when these substitutes or adulterants had been used in the comb foundation.

Propolis must be considered a by-product when brood food is being prepared. Every thing in the hive, not the direct work of the bee, is covered up with it. We find dead bodies of small animals, or even insects too large to be removed, entombed in it. The ancients were not entirely wrong when they thought the whole bee structure was encircled with the propolis.

The bees are so accustomed to the fragrance of the propolis or pollen balsam, and they have so long associated the gathering of pollen with it, that the odor of the propolis, if some is exposed somewhere in old hives, or the like, and is discovered by the bees, it at once suggests to them the idea that they must fill their pollen-baskets with the material giving off the odor; and, indeed, they proceed at once to do so, although they are not fitted for it. With great efforts they bite off little pieces of propolis and attempt to secure them to their pollen-baskets with their middle legs, in which effort, however, they fail more often than not. The most of the detached pieces are lost. Some bees succeed in filling only one of their two baskets. Bees loaded with propolis may be watched in a hive for days, for they can not again free themselves from it.

This gathering of propolis by way of the pollen-baskets seems to have led some early investigators to the supposition that honey-bees gather all propolis in this manner, some going so far as to assert that the wax also is so gathered.

The balsam of the pollen or propolis is responsible for the color of the comb structure. The bees, as already mentioned, scatter or drag the fresh pollen balsam over the combs, like boys tracking in mud over the carpets in the house. According as the balsam shows yellow, orange, or red, so the edges of the cells and the sealings become thus colored. The coloring-matter penetrates the wax

more and more. By a process of oxydation the color changes to dark brown, or nearly black, in time. Melting up the combs, this coloring-matter remains in the wax and decides its color. In time the color is modified if exposed to air and light. During renewed meltings the oxydized coloring-matter separates in flakes, and settles. Newly made waxes often vary in color; but old wax is usually more uniform. Even though generally the color of the pollen balsam is of a yellow, we find such of greenish yellow and the different shades of red, even to bluish red; and wax produced during times when pollen of such colors is carried into the hives plentifully may at first show these colors blended with the yellow; but in time by oxydation these colors revert to dark brown, and the wax will be again of the usual yellow.

The acidity (tannic acid) of the coloring-matter is apt to attack metals, and thus the color of the wax may be affected if metal receptacles are used in making wax. It is, therefore, advisable to use granite ware exclusively.

In melting large quantities of propolis (fresh) and wax together, the latter becomes darker in color, although in old propolis the oxydation has advanced far enough to make but little difference. Much of the propolis remains in the wax, and lowers its melting-point.

Propolis in its fresh state is very soft, adhesive, has a strong aromatic odor, and is bitter in taste. In very small quantities we find it in transparent yellowish-brown drops. Old propolis is hard, almost black, and the odor is not prominent till warmed up.

Propolis has its use in plasters, with softening effect. It is good for closing wounds and applying to boils. Taken internally it is of no value. It has been successfully used to give soaps a pleasant odor.

Among the plants or trees said to furnish propolis we hear the poplar and horse-chestnut named as the principal ones. The substance, however, found on the buds of these when gathered artificially does not resemble the propolis of the hive. It is colorless and almost without odor. The buds, too, furnish balsam at a season of the year when bees do not fly freely. There can be no question along this line. The melting-point of balsam from poplar (*Populus nigra*) was found to be 158° F.; that of the horse-chestnut, 165°, while propolis melts at 150°.

If the bees gathered balsam of our pines and fir-trees or spruce, we could detect it easily by taste and odor. The balsam of the hive is much more fluid than any of the balsams found as mentioned. The bees could not carry it in their pollen-baskets. It would run out.

To test whether or not bees would attempt to carry balsam to their hives, I offered them numerous different balsams of the consistency of propolis, but with only negative results, although the bees were at first attracted by the odor. Hives which were really in need of the propolis used wax and refuse instead.

From frost-cracks of tree-trunks sometimes oozes a sweet substance and also a balsam. All sorts of insects collect around such places, bees included, but they do not touch the balsam.

The evidence that bees collect their supply of propolis as a finished product is entirely lacking.

The explanation of Mr. Kuestenmacher as to the origin of propolis looks quite plausible to me. I would offer the following as a supplement: Dr. K. speaks about melting propolis and wax together. Of course, we can heat up these two substances in one receptacle, but they do not form a union. If we melt a kettleful of scrapings after cleaning hives, frames, sections, etc. (and many of us might save a lot of such in the course of a year), the wax will separate; and, being of less specific gravity, it will rise to the surface. The larger portion may then be poured off and dipped off. Even if melted up in an old iron kettle the color of the wax will be better (nice bright yellow) than any wax resulting from any machine that I have ever operated, including the Boardman solar, which goes to show that the coloring-matter of the propolis does not unduly influence the wax, as Dr. Kuestenmacher asserts; but, of course, my propolis-scrapings from cleaning wide frames and sections of comb honey may be considered old.

The specific gravity of propolis is greater than that of water, and it therefore drops down to the bottom of the dish if put into the water-bath. Wax is lighter, and rises to the top of the water. If we melt the scrapings in sufficient water a separation of wax and propolis takes place which is rather convenient; but the work is not done thoroughly—at least not so far as I have tested. Particles of wax may be seen sticking to the propolis.

Dr. Kuestenmacher says the drops of balsam, as they separate from the pollen, rise to the surface in the stomach of the bee. If the specific gravity of the propolis as I find it on my bench and on the floor is the same as that of the fresh product, the contents of the stomach being largely water, it would seem that the propolis would drop to the bottom of the stomach rather than rise to the top. I have no doubt that the perhaps oily substance will separate from the watery substance, when the bee might get hold of it and spit it out.

Naples, N. Y.

#### Short Crop in St. Lawrence Co., N. Y.

The honey harvest of St. Lawrence Co., N. Y., this year, is one of the poorest crops. Last year there were about seven carloads of comb honey of 30,000 to 40,000 lbs. each that were sent out of the county. This year I do not know of enough to make one carload. A few have one-third of a crop, but the average is about the same as our own, which is as follows: 1910, 260 colonies, very nearly 24,000 lbs. of comb honey; 1911, 300 colonies, not quite 2000 lbs. of comb honey. We think the cause was the intense heat in May, followed by drouth to quite an extent, and cool weather. Then the heat of the first days of July "burned" the basswood. Then, too, the honey is not what it should be in appearance, probably because of the time required in making it.

Depeyster, N. Y., Aug. 14.

R. THOMPSON.



# Heads of Grain from Different Fields

## Sweet Clover in Iowa.

I am writing you my experience with sweet clover; and if it is a common trouble it may be well to make mention.

When I have sown sweet clover in the spring on old cultivated ground there has been less than one per cent that grew that spring; but let it lie over summer and winter until the following spring, and then it grows. I am planning to sow this fall, and see if it will grow next spring. It seems as though seed has to freeze and thaw to germinate well. The kind of soil here, too, has much to do with growth. The soil is acid by litmus test, and is very deficient in calcium carbonate (lime) by test with hydrochloric acid. Common clovers do not make a large growth, although sweet clover makes a fair growth along the roads. Around yards where wood ashes have been thrown, and soil shows lime, sweet clover grows readily.

Stockport, Ia., Aug. 14.

C. R. DEWEY.

[In answer to the above, our friends will recall that our sweet-clover book says there is frequently much trouble in getting sweet clover to germinate, especially on cultivated ground. Dr. Miller has said repeatedly that, when he takes pains to get a good stand, there is often here and there only a plant; but where the seed drops off itself by the road, or on hard ground, it grows luxuriantly. Most of you have noticed this peculiarity of this particular clover; and I am well aware that the freezing and thawing of winter has much to do with it, especially with the unhulled seed. There have been quite a number of reports that the seed with the hulls off germinates quicker than the unhulled. In this connection I might mention the fact that we have had quite a few reports of the yellow sweet clover, both kinds—that is, if there are really two kinds—that make only a small growth, blossom the first year, and then die. Now, this must be largely a question of climate and locality, for in some cases plants from the same seed grow as high as one's head, and blossom the second year as well as the first. We shall be glad to get reports and experiences, especially with the yellow sweet clover. It is quite generally agreed that the white is more likely to blossom only after the second year, and I believe it grows taller and more luxuriantly.—A. I. R.]

## Italians vs. Blacks for Immunity from Foul Brood; the Duties of an Inspector.

Dr. C. C. Miller:—I should like to know how you effected a cure of foul brood, American or European. Has your method proved a safe one to try? In what number of GLEANINGS were your first experiments reported? Everybody advises getting Italianized to free ourselves of foul brood; but those who have pure Italians are troubled with it just the same as those with black bees.

What are the duties of a bee-inspector? How much are they paid for their work? When are they supposed to do it?

W. P. F.

[Dr. Miller replies:]

My experience has all been with European foul brood. I have had no experience with American as yet. You will find what I reported in GLEANINGS for 1909, pages 728 and 760, and for 1910, pages 8, 649, and 753. You will there see that I used the plan of brushing upon foundation, and also the plan of leaving the colony queenless for a time. There were some cases of a return of the disease by both plans, although I could not be sure whether the returns might not have been from outside. From my present knowledge I greatly prefer the queenless plan.

I think it is true that Italians will clean up the disease better than blacks. Of course there may be exceptions, just as there are exceptions in the matter of gathering honey. As a general rule, Italians are better honey-gatherers than blacks; yet there might be an unusually poor colony of Italians side by side of an unusually good colony of blacks, in which case the blacks might gather more than the Italians. So a good colony of blacks might do better with European foul brood than a poor colony of Italians. It is just possible that there is something in the mere fact of being Italian that gives the Italian the advantage over a colony of blacks of equal vigor, but I have my doubts.

The duty of foul-brood inspectors is to give information in suspected cases, and to give advice and assistance in curing the disease; also to enforce the curing or to destroy the diseased colonies if necessary. The inspector is supposed to do the best he can to get around as soon as he can wherever he is needed; but, of course, he can not be in two places at one time, and I don't suppose there is much done except when bees are flying. Compensation depends on the special law of each State—so much per day, and in most cases the amount is limited to so much for the year. Often an inspector appoints one or more deputies to assist. C. C. M.

## Chickens that Have Well-balanced Rations do Not Eat Bees.

Before reading Mr. Scholl's statement with reference to his chickens developing an appetite for worker bees, if I had been asked whether or not chickens ever eat worker bees I would undoubtedly have committed a grave error by answering in the negative—all of which proves the folly of using the word "never" in referring to the acts of bees.

I have kept poultry in connection with bees for more than thirty years, and in all that time I have never known a fowl to become an habitual eater of worker bees, although I have had occasionally one that would develop an abnormal appetite for drones. Such fowls will instinctively station themselves close to the side of the hive at the front end, and seldom directly in front, and watch the entrance exactly as a cat watches a mouse-hole. Whenever a drone makes his appearance, either from the outside or inside of the hive, his lordship is speedily gobbled up. An educated chicken is an expert drone-trap, and will often catch them on the wing when returning to the hive. A chicken that has developed an appetite for drones will listen with the greatest attention for the noisy hum of the drone, and is ever on the alert to devour him as soon as he strikes the alighting-board. Chicks may be taught to catch drones by decapitating drone brood that is about ready to hatch, and letting them pull the kicking drones out of the cells.

At present we have 400 hens that have the run of the apiary, and I am quite positive that none of them eat worker bees, nor have we any at present that make a practice of eating drones. The fact that I have never known a chicken to eat worker bees amounts to nothing in the face of the fact that Mr. Scholl's chickens do eat them; but it is my opinion that, if he would practice high-pressure feeding for egg-production, and keep hoppers full of feed before his chicks, including beef scraps, he would not be troubled with bee-eating fowls.

Birmingham, Ohio.

J. E. HAND.

## Old Bees Killing Off Young Ones.

My bees seem to work finely; but about every 18 or 21 days they kill off about a pint of young bees that are full grown and ready to work. I don't understand why they do this. This is the second time they have done so. This colony threw off a swarm about 20 days ago, and they went back in. On the 4th they threw off the second swarm, and they settled all right. I put them in a hive, and they are doing well. To-day the bees of the old colony are killing off the young bees again.

Glen Easton, W. Va., July 8.

J. I. LUTES.

[The extremely hot weather that we have been having during the past summer may account for the old bees killing off the young ones. That is to say, the trouble originates in this way: The weather is so warm that the young brood is overheated in some stage, and, as a result, the young bees are defective, either in their wings or in their legs, or in some minor respect, so that the older bees kill them off, because nothing but a perfect bee is tolerated in the hive. We can't understand why this should happen periodically unless it is because you have been having extremely warm weather off and on. It is possible that the entrance of your hive is not large enough. During hot weather we would advise raising the hive up on four blocks so as to allow plenty of ventilation under the hive, and putting a shade-board, if the hive is not already in the shade, on top of the hive. We have had reports something like this in times gone by, of how young bees were killed during very warm weather.

There is another thing that might account for it, and that would be the presence of the moth-miller. But inasmuch as your bees are Italians we hardly think that pest would be tolerated by them.

The fact that the bees swarmed out so often is another indication that there is a lack of ventilation. One of our best authorities believes that overheated brood is the *principal* cause of swarming.—ED.]

### How to Keep Bees Away from Cider-mills.

I should like to have you tell me how I can keep my bees away from a cider-mill which stands out in the open, only a quarter of a mile away. One man who worked there said they had killed seven bushels. The bees get on to the ground apples as they shovel them into the press.

Juda, Wis., Aug. 21.

F. E. MATZKE.

[There are three possible ways to keep bees out of cider-mills. One is, to screen the mill in with mosquito-netting—a procedure that will involve considerable expense. Another way is, to feed the bees in the vicinity of the apiary outdoors. To do this, shallow pans containing numerous corn-cobs or strips of wood, or, better still, trough feeders, of the Simplicity or Alexander type, should be used. These feeders should be placed close together on level ground, or boards that have been properly leveled up. There should be anywhere from ten to fifteen square feet of feeding surface, the amount depending on the number of bees in the apiary. In the feeders so placed, pour a mixture of sugar and water—nine parts of water to one of sugar by measure. The sugar, of course, should be thoroughly stirred until all is dissolved. It may be necessary to keep up this outside feeding while the cider-mill is in operation, covering a part of a month or even more.

The third method, perhaps the most practical, is to move the whole apiary to an outside location, say two miles away. If the bees do not need feeding for winter, the last plan would be the most feasible.—ED.]

### Pollen from Milkweed Killing Bees.

I have noticed for some time that some of my bees seem to have yellowish appendages to their feet. Then I noticed that good healthy bees were carrying off those afflicted. I supposed that the affliction must be obnoxious to the colony. However, in the limited literature that I now have I can find nothing about the trouble.

Granville, O., July 14.

A. M. BRUMBACK.

[From the general facts presented, it would appear that the bees were gathering pollen from the milkweed. These pollen masses that the bees gather stick to their feet and soon harden, and are the means of killing some of the older bees. It is probably true that the younger bees free themselves from these peculiar appendages. There is no remedy that you can find—in fact, none is needed, as you will find there are but comparatively few of the bees thus handicapped in their flight. See under the head "Milkweed," in the A B C and X Y Z of Bee Culture.—ED.]

### Renewing Bees and Queen in an Observatory Hive Located in a Show Window.

Please give me a little more information on Hives of Grain as contained on page 472. I want to place one or two colonies in the rear of my store, and get a frame of bees out for an observatory hive; but as I am very green about bees I should like to know how to do it. If I take a frame out of a full colony with the queen in it to be put in the observatory hive, what will become of the colony without a queen? I will change combs every week, as you say; but when I put the frame and queen back to stay, what will the bees do to the queen? Would it be best to take a frame of bees and queen alternately each week out of the second hive? Should I clip the queen? Should I put full sections of honey in the super of the observatory hive, or one or two empties with starters? Should I take one of the middle frames out of the colony? Please tell how to go about it. We have three large school buildings in town, and I wish to make a display in them.

Monongahela, Pa., Aug. 9.

BEN FORSYTH.

[In relation to the item that appeared on page 472, we may say that, if the queen belonging to a colony has been away from it long enough for said colony to start cells, the cells would have to be destroyed, and the queen would probably have to be intro-

duced on her return to the hive. The probabilities are that confined bees in the observatory hive would accept a queen without introducing.

Very often you can arrange an entrance to a nucleus exposed for public inspection so that exit to entrance is three or four feet above the heads of passers-by. This may be accomplished through a piece of hose or through a wooden tube. In that case it is not necessary to renew the bees.

Perhaps the simplest plan for you would be to have four or five nuclei in the rear of your business place, and change the bees in your observatory hive about once a week. In this case take queen, bees, brood, combs, and all. After bees have been confined a week, put them with the queen back in the nucleus hive from which they were taken, and then take the bees, queen, and brood of another nucleus hive. This will eliminate all possible trouble that might arise over the queen. We would not clip the queen, as that would spoil her appearance for exhibition purposes.—ED.]

### Steam Knife Tried and Abandoned.

Reports have been requested from those using the steam-heated uncapping-knife. We have used it, but find our help soon get back to the old-style Bingham. I am inclined to think they did not get steam enough; but if one *must* use one gallon of water per hour, as Mr. Metcalfe speaks of doing, it would seem as if some of this steam would condense and get into the honey; besides, there must be some heat where so much water is turned into steam.

I have noted the editor's remarks, page 414, July 15, about goods corresponding with their advertisements. I buy 100 to 200 queens a year, but always let the fellow who advertises the long-tongued red-clover queens sell to those who will swallow the bait. When such men as Prof. Gillette have shown that tongue-length of bees varies but a few hundredths of an inch, what sense is there in advertising a long-tongued strain when the breeder has been, perhaps, but a very few years breeding up the strain? People who buy such advertised bees remind me of country boys on our excursion steamers playing the slot machine, where 95 per cent goes to the machine and 5 per cent to the player.

Birmingham, Mich., July 22.

A. W. SMITH.

### Carbolic Acid to Stop Robbing.

I notice your request for a report from those who have used carbolic acid to stop bees from robbing. I first dilute the acid with water, then dampen with it a piece of muslin 4 x 5 inches. After contracting the entrance to 1 x 3 inches I fasten the muslin to the alighting-board with four carpet-tacks, one at each corner, to prevent the wind blowing it off, as we have strong winds in Kansas. In addition to this I use a force-pump sprayer that throws a strong stream 30 feet. My hives stand in rows 3 feet apart, facing the southeast. During a bad case of robbing I have effectually stopped it in 15 minutes. I am confident that the application of water with a force-pump is the most effectual part of the treatment to stop robbing. During the past four years I have lost heavily by neighbors' bees robbing mine, but none since I have used the above treatment.

Asherville, Kan., July 24.

B. F. HARFORD.

### The Danger of Using Too Much Sulphur in Fumigating Honey.

After removing my surplus honey I fumigate with sulphur to prevent trouble from the capping pin-worm. For the last few seasons I have had trouble with the capping turning a greenish hue. Is it due to the quality of the sulphur, the amount, or what? Is there a better method of fumigating?

Deposit, N. Y., July 3.

CHAS. H. STILES.

[Your honey takes on a greenish color after fumigating with sulphur because you keep it in the room too long, or else use too large an amount of sulphur in too small a room. A very little fumigating will be sufficient to destroy all insect life that may be on the honey. A far better plan, and one that is now generally recommended, is to use bisulphide of carbon, which can be obtained at any drugstore. Place this in a small vessel above the pile of honey, because the fumes of it are much heavier than air, and settle at the bottom. You will find directions for its use given in our A B C and X Y Z of Bee Culture.—ED.]



# Notes of Travel

A. I. Root

After leaving my good friend Selser, the manager of our Philadelphia house, he wired Mr. Thorndyke, manager of our New York business, who met me as I got off the ferry, and it is well that he did so, for New York is a pretty large place for a man of nearly 72 to find his way in. I am not going to tell you much about the great city of New York, but I will give you just a glimpse here and there. Right close to our business office, on Vesey St., an immense building is going up. Now hold your breath. It is to be 100 stories, and the ground it will stand on cost *five millions* of dollars. I asked Walter how deep they were going to secure a foundation for that immense structure. He said he did not know; and as hundreds of workmen were just then starting the foundation I ventured to walk through the inside fence just to get a glimpse of how deep it was, and of what was going on down there. I got my glimpse; but a hand was put on my shoulder, and somebody said, "Look here, old friend, this is not allowed. You might get hit by the derrick and other ponderous machinery."

I afterward learned that they went down *170 feet*. Then I asked the question how much steel and cement could be piled on a single spot of old mother Earth without breaking through the crust or indenting the solid ground so as to throw the structure "out of true." I can not give you the dimensions—that is, how much ground this structure is to occupy, but it takes one whole city block. I asked Walter if such a building would probably be all occupied. He thought it would, because it is right in the heart of the business portion of the great city. Can you imagine what such a structure, if all occupied, would rent for? I can give you something to figure on a little. In that locality it costs \$50.00 a month for two rooms, each perhaps 12 x 15, on the third story of a building. When I protested that no one could afford to pay so much, I was told that, to do business, one *must be* on such busy streets. It is the headquarters of poultry supplies—in fact, close by the Cyphers people and others, and where people are coming in almost constantly every day, and are wanting to know all about poultry, etc. Besides \$50.00 a month for that little office "upstairs," it would cost \$1000 a year rent for the second story of a dilapidated old warehouse away over in Hoboken, almost two miles away, and reached by a tunnel under the river, a mile long. When I protested again against such an enormous rent for such poor accommodations, I was told to look around a little and see what is going on in a great city. Business called me to a locality but two or three blocks away, where there was some vacant ground. Now, this ground was a sort of frog-pond, I should call it. There was green scum on the water, with mosquitoes thrown in, and no outlet had been provided for draining off the

water. Out of curiosity we inquired what that vacant ground was supposed to be worth. A place for building, 25 feet front, running back 100 feet, was \$2000. Instead of getting an outlet for the water they filled in with dirt, then drove down piles on which to place the buildings. Of course I was disgusted with that whole neighborhood; but one of the friends suggested I should see what was going on close by. Within about a stone's throw of that same "frog-pond" locality a good lady (God bless her and all her kind) of great wealth felt somewhat as I did about the situation, and her heart was filled with compassion for the poor children that literally "swarmed" in that district; so she bought a great tract of land right there (where land cost so much a foot), and had already filled it in with good soil, planted trees and flowers, put up swings, a beautiful bathing apparatus, *pure* drinking water, and every thing that heart could imagine for the droves of children who, perhaps, had never had a good wholesome bath in their lives, and had never before had a glimpse of green grass and flowers. When I actually witnessed what great wealth could do in *transforming* a locality like that I became more hopeful.

After leaving New York my next point was Waterbury, Ct., where my father was born, and where he lived till he was about twelve years old. I will tell you what called me there. One of our clerks here in Medina (it was not a *girl* clerk) made a mistake in addressing an A B C book. He sent it to Middlebury, *Ct.*, instead of Middlebury, *Vt.* After it had lain in the office for quite a while the postmaster gave it to his mother-in-law because her father had been interested in bees before he died. She became taken up with the book, particularly as her *mother's* name was Root, and she finally wrote to our company, asking if she could have the book if she would pay the proper price,\* and she also made mention of her ancestry. Such letters usually come to me, and finally I scraped up an acquaintance, and then we found we were relatives, and the good woman gave me a very urgent invitation to call on her when business or any thing else called me that way. I not only had a nice visit with her, but I found at Waterbury a cousin of hers, Samuel Root; and as my father and grandfather were *both* named Samuel, we soon formed a friendship as well as traced a relationship. Waterbury is now a manufacturing city with something like 100,000 inhabitants. Middlebury is a beautiful little suburb out on the trolley line. Two things impressed me in regard to the town. When I first got up in the morning a group of magnificent buildings, or a pile

\* When I cautioned the clerk, and spoke of more care in addressing, etc., he said the "Vt." was obscure, and ventured, also, that he sold "*two books*" instead of one.



of them, of beautiful architecture, surrounded by lawns of nice flowers and trees attracted my attention. I walked around it and through the grounds before other people were stirring; and soon after I learned from my relatives that some good woman of wealth had planned and arranged this place as a school for women. By the way, let me mention that, while in Troy, N. Y., I saw a similar structure built almost entirely of expensive granite, which I was told was built by *Mrs. Russell Sage*. This great school or seminary was also planned and put up solely as a school or seminary for girls and women who have not the means to educate themselves. Once more may the Lord be praised for the *women* millionaires who are moved to do such a work for the benefit of the less fortunate ones of their sex.

Just one thing more in regard to Middlebury. When I spoke about huckleberries Mrs. Bronson said, "Oh! there is any quantity of them up on the hill back of the house." And then the mother and daughter volunteered to show me the berries. There were great quantities of them then going to waste; and I found three distinct varieties growing up there on that dry sandy hill where the rocks were so plentiful that it made me think of a story that father used to tell about the "Connecticut hills." He said they had to grind the sheep's noses down sharp, so they could pick the grass out from between the rocks and stones. While you are reading about huckleberries, turn over to the description and picture on pages 215 and 223, April 1.

Let us now digress a little. When I first got a copy of "Langstroth on the Honey-bee" he had in it considerable to say about his good friend W. W. Cary, of Colerain, Mass.; and while Langstroth was inventing the movable-comb hive his experiments were made in a dooryard belonging to his friend Cary; and, in fact, he used to preach in a meeting-house a short distance from the Cary home. The old house is there still. The name of the town, Colerain, has been changed to Lyonsville, because of a trolley line that runs up the valley. And, by the way, these electric cars are run by the power of a little stream that comes down through the hills. If I were in California I would call it "down through a canyon." And Massachusetts reminds me quite a little of California, only there are hills instead of mountains. On my way from Waterbury to Lyonsville I caught a glimpse of Mt. Hood and of Mt. Holyoke. I also went through the Hoosac tunnel, five miles long, through the Berkshire hills. Well, W. W. Cary has gone to his long home with father Langstroth, Quinby, and many others. But his son, W. W., nearly my age, is still very *much* alive. His hobby just now is not bees. His son and son-in-law look after that department of the A. I. Root Co.'s business, and raise queens, etc. W. W. Cary has one of the most extensive establishments for manufacturing pure cider vinegar that there is, perhaps, in existence. If I have

not made any mistake they make something like 15,000 barrels of vinegar a year. Do you ask where he gets the apples? Now, here is where *my* recent hobby comes in. I never knew, until this visit, that there is a locality in the world where apples grow wild "out in the woods." The truth is, the beautiful hills dotted with forest-trees in that region are also filled more or less with apple-trees. These apple-trees come up and grow spontaneously. I can understand how one apple-tree on the top of a great hill should let apples drop and roll all the way down in the valley in different directions; but I can not quite make out how any apples originally "rolled uphill;" nor can we very well conclude that the birds carried the seeds—that is, I am not quite sure they could do so. Well, you suggest, if this be true, the apples would all be natural fruit. So they would; but during the years this vinegar-plant has been running, the farmers have "caught on," and have not only been clearing off the forest-trees and underbrush, but they are *grafting* these wild apple-trees. Of course, this is a natural apple region or the trees would not grow. Now, this man Cary is a genius. He has an acetylene-light plant, all his own, that lights up his premises most beautifully. Then he has a cement reservoir on top of one of his hills; and a water-wheel that runs his cider-mills also pumps water up to fill his reservoir. When there is not water enough to run the factory a gasoline-engine comes in and takes the place of the turbine wheel. Just then I found friend Cary full of animation and enthusiasm in clearing the rocks from that Massachusetts hill around the reservoir in order to plant an apple-orchard. Some of the rocks were so large they had to be blasted with dynamite so a big team could haul away the fragments on a stoneboat. While leveling up the low places they put in tiles for drainage so as to make it an ideal spot for growing trees. Some pomological professor said a while ago that the best location for an apple-orchard is where the trees seem to grow spontaneously. The process of making vinegar out of apple cider is so complicated that I can not undertake to describe it here. I will only say that the apple juice is converted into alcohol, then into acetic acid, by trickling it slowly over beech shavings; and this process is going on winter and summer the year round in that great vinegar-factory. Let me add that great precaution is exercised to prevent any employee from getting hold of the "hard" cider. In fact, no one is kept on the premises who would be likely to be harmed by such a temptation. Furthermore, the Agricultural Department at Washington is so much interested in pure vinegar that a government employee is located in the factory during the busy season, not only to put on the government brand, but to assist in giving to the world the best vinegar to be had for the consumption of the people. Of course this institution could make vinegar from honey just as well as from apples; but there is not honey enough

in that region to cut any figure in such an immense establishment.

In the afternoon we called on Mr. Davidson, who is a chicken enthusiast. We were shown some Kellerstrass pullets and cockerels that were about as handsome as any thing I ever saw in the shape of a fowl. Some of the chickens we particularly wanted to inspect had found shade under the house; and a very pretty flaxen-haired little girl volunteered to crawl under the porch and drive out the "chooks;" and while admiring said "chooks" I could not help admiring the little girl who drove them out. It made me think of the words of the Master, "Ye are of more value than many sparrows."

It was difficult to get a view of Mr. Davidson's handsome chickens, however, because in every yard he had good-sized patches of the most luxuriant Dwarf Essex rape. This not only supplied green food, but gave them shade; and the poultry droppings furnished fertility to the soil. Of course I was interested in a tree of Yellow Transparent apples, all ripe and "ready to drop," corroborating once more the fact that the soil of those Massachusetts hills is just the thing for growing apples; and letting a good flock of chickens run through an orchard is, perhaps, the ideal way of furnishing one of the best fertilizers in the world for apple-trees. And, by the way, our own orchard here in Medina is now giving a great crop of the finest and largest fall pippins, Gravensteins, and winter rambos, that I ever saw anywhere. Our chickens have had the run of the orchard for the past three summers.

They pick up insects, furnish fertility to the ground, and the apple-trees give them plenty of shade and fruit. Unfortunately, however, there is such a crop of fall apples that I fear we can not dispose of them, even at 10 cts. a peck.

To get back to Mr. Davidson and his chickens, we found our friends busy with a new rat-trap. It is simply a box containing grain, with a hole just large enough to let in a rat, but yet not admit chickens—that is, those of any size. After the rats have been allowed to hold "high carnival" in that box for some time a trap is introduced. This small opening that admits the rats, of course would not admit a cat; so the rats, when pursued, would be pretty apt to seek the box as a refuge. If I remember correctly this box also contains cotton batting or other soft material to encourage the rats to make a nesting-place. A hinged lid permits opening it to put in grain, etc.

We were shown several hens that had already made a high record in number of eggs in a year.\* And this brings me to the point where I took the train as mentioned in our previous issue.

\*By the way, at our recent county fair our Ohio Experiment Station made an exhibit; and among other things were some fine photos, life size, of two Barred Rock hens looking very much alike. Another photo, near which each of the hens was displayed, showed the number of eggs each one had laid in a year. Although the two hens were of the same age, and had exactly the same care, one showed a heap of 198 eggs, and the other only 31. Then a card on the exhibit read something like this: "How many of you farmers are keeping hens that lay only 31 eggs in a year (or less), and you do not know it?"

## Our Homes

A. I. Root

He is a man of sorrows, and acquainted with grief.  
—ISAIAH 53:3.

Think not that I am come to send peace on earth:  
I came not to send peace, but a sword.—MATT. 10:34.

On page 442 of our last issue I promised to tell you something more about that Bible class. The lesson for that day was about Jeremiah, as you may remember; and the good pastor asked our class of men if we had any such men as Jeremiah nowadays. There were several answers. D. L. Moody was mentioned; also Billy Sunday and others I can not recall. But I finally suggested Carrie Nation. The pastor assented, and said he was glad her name was mentioned. There was quite a little discussion in regard to her character. Different ones present pointed out different things in her life; and as I had recently heard her speak, and had had a talk with her afterward, I gave them some particulars. Since her death a good many facts have come to light that people generally did not know of nor understand. First and foremost, before she commenced her remarkable crusade of smashing property she plead with the chief of police, the mayors, and finally with the *governor* of Kansas, to

have the temperance laws enforced; and she met with the same kind of rebuff that Christian and temperance people have met and are meeting all over our land.

Let me digress a little to give you an illustration right here near my own home. Ohio has recently enacted some stringent laws in regard to race-track gambling. Rev. A. S. Gregg (Caxton Building, Cleveland, O.), of the Civic Reform League, found gambling going on in broad daylight recently at a race-track near Cleveland. He knew how difficult it was to get conviction, and so he *joined the gamblers* and gambled with them, and then went to the police and asked to be arrested with others of the gang. The police would do nothing. He appealed to the chief of police, the mayor, and different officers, and finally to the governor of this State. So far as I know, no arrests have been made, and the gamblers simply laughed at him for the pains he had taken, and for the trifling amount of money he had lost in "betting at a horse-race."

Mrs. Nation, after praying daily for months over the matter, resolved on doing something in the same line. She said, and



I believe she said truly, that in answer to her prayers the Lord directed her as to what she should do. When she found that those whose business it was to enforce the law against selling intoxicants in broad daylight in Kansas would do nothing whatever she started out, after a night of prayer, with her humble horse and buggy, with a load of brickbats and stones, and then with her apron full of these missiles she marched boldly into a saloon and smashed the bottles, mirrors, and other expensive furniture. Then she asked to be arrested, but called the attention of the officers of the law to the awful inconsistency of arresting *her*, while they let the saloon-keepers go scot free. She said in substance, "I have damaged *property*, and, of course, should be treated accordingly; but these men have damaged and ruined the lives of people having immortal souls. For God's sake, arrest and punish *them* if you would undertake to arrest and punish *me*."

They were dumbfounded. Her argument was unanswerable. I do not remember whether she was arrested that first time or not, but she finally went to prison many times, although they soon let her out again. As in the case of Paul and Silas, the prison doors were soon opened, and she was set at liberty to go on smashing the property of saloon-keepers. Now, note right here that, *since* her death, it has been ascertained that she never damaged a saloon that was doing business in accordance with the laws of the State or locality. Many (if not all) saloon-keepers had no license, or in some other way were plainly violating the law. They were carrying on their business without any *show* of authority. Her work made a sensation, not only throughout our own nation, but her name became familiar, and a by-word over almost all the face of the earth.\* People called her crazy; but now it begins to dawn on our understanding that there was not only a "method" in her madness, but a *wonderful* method. In every town, she visited she hunted up the mayor, the chief of police, and often the governor of the State. She plead with them, and begged them in the name of God and the suffering women and children to enforce the laws and protect the helpless suffering ones.

While in Florida my good neighbor Rood informed me that Carrie Nation was to speak on the Park. I said, "Why, friend Rood, there was nothing said about it in our town paper. It is too bad that a more extended notice was not given of her coming."

He replied, "Mr. Root, every man, woman, and child, almost, on the face of the earth

has heard of Carrie Nation; and you may be sure there will be a crowd there to see and hear her."

Before she began her talk, stories were going around to the effect that she had grabbed cigars and cigarettes from the mouths of smokers while they were in the street, and, of course, this was against her. In her talk she also made some scathing remarks about secret societies, and, of course, this did not suit everybody. While I felt almost as she did about these things, I was sorry she did not stop when she had ended her talk in regard to intoxicants. By the way, I might say here, for I have said it before, that when I am asked about secret lodges, etc., I have always replied, "I belong to the Lord Jesus Christ, and to him only; and he has said, 'In secret have I done nothing.'"

Some one suggested in that audience of several hundred that she would have received a much larger donation had she omitted that part about Free Masonry, Odd Fellows, etc. After her lecture I had quite a little talk with her. In regard to the charge made that she was in the habit of grabbing cigars or knocking the pipes out of the mouths of men in the streets, so far as I can learn her offense was something like this:

She would go to a boy, and in a kind and motherly (or, perhaps, *grandmotherly*) way would talk with him about the danger of the habit he was forming. Then she would say to the little fellow, while she placed her hand on his shoulder, "Won't you let grandmother take that dangerous thing out of your mouth and throw it away?"

The boy usually yielded to her kind and reasonable remonstrances; and she did, with his permission, take it out of his mouth and throw it away. Some papers told how much money she made or received by selling her hatchet or book, etc. It is true that our good people handed over to her several thousand dollars; but she told in her lectures what she wanted the money for, and what would be done with it, and what *had* been done with it, and her book tells in *detail* of the founding of a home for inebriates or their families. She met with many unkind words, many threats, arrests, imprisonment, and other indignities. She was put on short rations many times in the vain endeavor to make her give up her fanatical crusade, as many were pleased to term it; but, like Paul of old, she kept up her courage and trust in the guiding hand of her Savior, and "fought the good fight and finished her course." Her ending was sad. She was twice married, and each time discovered, after her marriage, that her husband was intemperate, and also a member of some secret society. She has one child. This girl married a man who *also* was intemperate; and his only son (inheriting the love for drink and evil companions from both father and grandfather) drifted into a saloon and stood behind a bar. In one of her last crusades, near the time of her death, the young man behind the bar said, "Why, how do you do, grandma?"

\*She not only roused up and awakened from their stupor the officers of the law of the State of Kansas, but of the whole United States; and we may well believe she was the instrument, in God's hand, in starting a wave for temperance and law enforcement that will sweep and is now sweeping the whole face of the globe. God grant that this wave may sweep the State of Maine so far up on dry land that the brewers will never again think of trying to get high license (or "local option" either) to take the place of prohibition.



As she was so often addressed in that way almost everywhere, she thought nothing of it until the young man spoke to her again and said, "Why, grandma, don't you know me?"

It was indeed *her own* grandson, who, without her knowledge, had drifted into the position of a bar-tender. The shock was so great, to think that her only grandson—the grandson of *Carrie Nation*, who was then the greatest apostle of temperance (or one of the greatest the world ever knew), should be behind a bar that it overcame the poor old lady, already well advanced in years. I think she had already been feeling that her mission was drawing to a close. Isaiah tells us that our Lord and Master would be, when he came to earth, "a man of sorrows, and acquainted with grief." Let me digress.

I told you some time back of the mother hen that flew almost into the open jaws of that great alligator in her insane effort to protect her ducklings. The chances against her were a thousand to one. What could the poor feeble hen do to hinder those great horrid open jaws from swallowing her up as though she were but a fly? But yet she braved danger, and showed fight without any fear or regard for the great strength and

power of her enemy. In a like manner, Carrie Nation braved the wrath of drunken men and millionaire brewers. With her hatchet she demolished the instruments of their cursed traffic, without any fear of the consequences, like the poor hen in protecting her charges. In her talk she used the very figure that I have often used—that of "fighting mothers." It has been said more than once that Carrie Nation was a modern John Brown, and lived and died a martyr to her convictions. The Lord Jesus Christ said, in the second of our texts, that he came not on earth to bring peace, but a sword. Carrie Nation came, not with a sword, but with her *hatchet*, and that hatchet opened the way and turned the first furrow that started the temperance reform that is now so rapidly making the States of our nation white instead of black by starting a wave of reform that bids fair to spread over the whole wide world wherever the intoxicating cup has got a foothold. May God bless the memory of that devoted soul who feared not the wrath of man but feared only the wrath of God; and she has gone to her reward—"a crown of righteousness which the Lord, the righteous Judge, shall give"—a "crown of glory that fadeth not away."

## POULTRY DEPARTMENT

### HOUSING POULTRY IN FLORIDA AND OTHER SOUTHERN LOCALITIES.

In our July 15th issue of last year I discussed this matter at some length, and I gave a picture of my Florida poultry-house. A little later, as you may recall, friend Keck described a successful poultry-house with no roof overhead, in Southern Florida. It was inclosed with poultry-netting to protect the fowls from nocturnal prowlers. Our old friend H. H. Stoddard, the man who gave us "The New Egg-farm" over forty years ago, is now in Rivera, Texas, and he has written quite a lengthy article for the *American Poultry World*, describing something for poultry in warm climates, that I think may result in a revolution in chicken-houses.

We find also in the *American Poultry Journal* for August an article from friend Stoddard on poultry-keeping in the great Southwest. It covers several pages, and is an article of great value to every one who is thinking of trying poultry in Florida, Texas, or other Southern localities.

By the way, Mr. Stoddard, in writing about the stick-tight flea, calls it "stick-fast flea." I presume he means the same thing; but it is very unfortunate that there is such a confusion of names of these Florida pests. Very few people, especially those from the North, have a correct idea of these insects. For instance, quite a few insist that the "redbug" is the same thing as the stick-tight flea, whereas they are not alike in any particular. The redbug is almost microscopic, while the stick-tight flea is a veritable flea, and can be readily pulled

from the flesh or off from the comb of a chicken with a suitable pair of tweezers. The redbug produces a swelling and sore that lasts some time. The *flea* just bites and hangs on. When you pull it off, that is the end of the trouble.

Last fall I visited a poultry-ranch near Jacksonville, Fla., where the houses—at least one of them—was 600 feet long, made of expensive lumber, and tight enough and warm enough for a poultry-house here in the North. They were planning to have 10,000 laying hens all at one time. I have not seen any report in the papers from it since. I said at the time that it was a great waste of money, and that no such expensive structure was needed. Well, Mr. Stoddard declares that in his locality in Texas nothing more is needed than a frame of *wire netting* to protect the fowls. For a hen and chickens he has a wire cage 18 inches square and a yard long. There is a door at one end, of course, to put the hen in, and I suppose there is a smaller door to let the chickens out and to retain the hen if need be. When the chickens are old enough to be weaned, a similar structure is made, say twice as wide; that would be a yard square on top, and 18 inches high. Some roosts are put in for the chicks to roost on, and that is all. They can not smother, for they have all outdoors with the "bars down." After they are feathered out, rains will do them no harm, so Stoddard says; and I know from experience that, when the mother-hen flies up into a tree and coaxes her children to follow, they do splendidly, no matter how hard it rains at night.

For full-grown fowls, friend Stoddard uses netting with a two-inch mesh, and makes it about four feet high, and, say, six feet square, according to the number of fowls. No mites or other vermin can find a lodging-place in this all-metal chicken-coop. Of course you will have to go around to all the cages, big and little, and shut them up after the fowls get in. Then you will need to get up by daylight (as I do when in Florida), and let them all out, big and little, as soon as they want to get out. This is something of a task, it is true; but it is the only method that I know of to prevent absolutely all losses from night prowlers. If you think there is no danger in your locality of skunks or possums or rats digging under, you may omit the poultry-netting floor. But I think it is safer to have it. Then you know your valuable stock is absolutely safe, and that it will be there in the morning sound and well. Now to clean out these poultry-runs, big and little, just grab hold of one side and turn it upside down. This scatters the droppings over the ground, and it is certainly quicker and simpler than any method of cleaning the roosts, and will keep them sanitary.

To prevent chickens from getting into the habit of roosting on top instead of inside, friend Stoddard has used a triangular cage, the three sides being all alike. I do not exactly see how this works unless he has one roost the whole length of the long wire-cloth prism. In order to economize the expense of wire cloth he has also used a long cylinder, the birds roosting, as I understand it, on a pole that goes through the axis. To give them fresh ground every morning, you simply roll the cylinder over half a turn or less. Where this square cage is used for large fowls, two of the roosting-poles can project through far enough so a boy at each end can move it where you want it. These poultry-cages are to be used principally as colony houses—no yard—and friend Stoddard claims to be the first writer on poultry to suggest houses scattered over the “egg-farm” instead of having separate yards for his flocks. This may be true, for I well remember when his first account, with diagrams, in the *American Agriculturist*, of his plan of an egg-farm, came out, I was so much taken up with it that I could hardly sleep at night.

Now, friends, these poultry-cages can be used, I am sure, with much benefit to the health of the chickens here in the North in warm weather. In Florida, I know they will give good results the year round; for, as I have told you, I kept laying hens successfully for three or four winters in my Southern home, roosting in trees with no protection whatever from storms of any sort, and I never had chickens do better. For pity's sake, let us stop “killing our chickens by (mistaken) kindness.”

WATER FOR DUCKS, ESPECIALLY IF YOU WANT FERTILE EGGS.

We frequently see it stated in the farm papers that Indian Runner ducks can be

reared without water to swim in; and we are told again and again that little ducks must not be allowed to get into the water. You will remember I have discussed this latter point at considerable length. Well, a woman stated in one of the poultry journals (I am sorry I did not make a clipping of it) that ducks, in following nature, mate in water; and this reminds me of something about our Indian Runner ducks in Florida last winter. Before I let them out of the yard to go to the creek I repeatedly saw them mate; but after I let them go to the creek in the morning (after the eggs were laid), the very first thing after getting into the water was the mating. In fact, they seemed to postpone this matter (so important in regard to getting fertile eggs) until they were let out in shallow water; I wondered what this meant, and what was the cause of it. Well, now, this lady stated in one of the poultry-journals that, unless the breeding ducks were allowed to mate *in water*, the eggs would not all be fertile. Another writer in one of our poultry-journals, in speaking of geese and raising goslings, says the same thing in regard to geese—that the eggs would not hatch unless the breeders are permitted to do their mating *in the water*. Now, this is an exceedingly important matter; and yet our books and writers about Indian Runner ducks have had nothing to say about it. In the July number of that excellent journal called *Poultry*, the editor writes as follows:

The eggs from the Indian Runners have failed to hatch entirely. Of more than 100 eggs which we have set, mostly under hens, we have had exactly three ducklings hatch, and not one of them lived to be three days old.

Of course, we do not know that the Runners that laid the above eggs had no access to water to swim in; but in view of what I said, it seems very likely. See below.

It seems that somebody complained to the editor of the *Practical Farmer* that goslings did not come out of the shell unless they were helped out. The poultry editor replies as follows:

We asked Roy Crandall, the party who sold us the goose eggs, and who makes a business of raising geese on a large scale, about the trouble we had in getting the little goslings to come out of the shell, and he writes us as follows: “I should say that lack of moisture was the reason you had to peel the goslings off the shell. Some folks let the goslings die in the shell, and then complain about the eggs hatching poorly. We take the goose and set her in a pan of lukewarm water about the 7th, the 21st, and 27th or 28th day; get her fairly wet, and then let her go back on the nest. She won't like it, but has to stand it. This will moisten the eggs just about right. A goose goes into the water nearly every morning while sitting.

Now, the above is an important suggestion. A duck or goose, while sitting, surely goes into the water (if she can) every day or at least every two or three days; and when she comes back to her nest she certainly gives the eggs a pretty good wetting; and, if I am correct, the directions that go with almost every incubator, in regard to hatching duck eggs, recommend considerably more moisture than is ever needed with hens' eggs. And all this reminds us that ducks and geese are “waterfowls.”